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ABSTRACT

This report shares with educators and the public all of the test items on which spring 2002 student results from the Massachusetts Comprehensive Assessment System (MCAS) are based. The release of these items provides information on the kinds of knowledge and skills students are expected to demonstrate on the MCAS tests. Local educators are encouraged to use this document with their school's "Test Item Analysis Reports" to identify strengths and weaknesses in curriculum and instruction. Released items are from these tests: (1) reading, grade 3; (2) English language arts, grade 4; (3) English language arts, grade 7;(4) English language arts, grade 10; (5) mathematics, grade 4; (6) mathematics, grade 6; (7) mathematics, grade 8; (9) mathematics, grade 10; (10) science and technology/engineering, grade 5; and (11) science and technology/engineering, grade 8. An appendix contains the Mathematics Tool Kits and Reference Sheets. (SLD)

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MCAS

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Release of Spring 2002 Test Items

July 2002
Massachusetts Department of Education

TM035002

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Massachusetts Department of Education

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Commissioner's Foreword

Dear Colleagues:

The Massachusetts Comprehensive Assessment System (MCAS) is the Commonwealth's statewide testing program for public school students, developed in response to the Education Reform Law of 1993. MCAS is based exclusively on the rigorous academic learning standards contained in the Massachusetts *Curriculum Frameworks*. These *Frameworks* and the MCAS program have been developed with the direct and active involvement of educators from across Massachusetts and with the support of the Board of Education. Together, the *Frameworks* and MCAS are designed to raise the academic achievement of all students in the Commonwealth.

The purpose of this document is to share with educators and the public all of the test items on which the spring 2002 MCAS student results are based. The release of these items provides considerable information regarding the kinds of knowledge and skills that students are expected to demonstrate on the MCAS tests. Local educators are encouraged to use this document together with their school's *Test Item Analysis Reports* to identify strengths and weaknesses in curriculum and instruction, and to guide the changes necessary to more effectively serve students.

You will find this document on the Internet at **www.doe.mass.edu**. Please note that, due to some publishers' restrictions on copyright permissions, the paper version of this document contains some MCAS test materials that cannot be included on the Internet version.

Thank you for your support as we work together to strengthen education for our students in Massachusetts.

Sincerely,

David P. Driscoll
Commissioner of Education

Table of Contents

Commissioner's Foreword

I. Document Purpose and Structure 1

II. Reading, Grade 3 7

III. English Language Arts, Grade 4 43
A. Composition 45
B. Language and Literature 49

IV. English Language Arts, Grade 7 79
A. Composition 81
B. Language and Literature 84

V. English Language Arts, Grade 10 115
A. Composition 117
B. Language and Literature 120

VI. Mathematics, Grade 4 149

VII. Mathematics, Grade 6 185

VIII. Mathematics, Grade 8 219

IX. Mathematics, Grade 10 251

X. Science and Technology/Engineering, Grade 5 291

XI. Science and Technology/Engineering, Grade 8 317

XII. History and Social Science, Grade 5 343

XIII. History and Social Science, Grade 8 375

Appendix A: Mathematics Tool Kits and Reference Sheets 407

I. Document Purpose and Structure

Document Purpose and Structure

Purpose

The purpose of this document is to share with educators and the public all of the test items on which the spring 2002 MCAS student results are based. Release of these items is intended to provide additional information regarding the kinds of knowledge and skills that students are expected to demonstrate on MCAS tests. Local educators will be able to use this information to identify strengths and weaknesses in their curriculum and instruction, and to guide the changes necessary to more effectively meet their students' needs.

This document is also intended to be used by school and district personnel as a companion document to the school- and district-level *Test Item Analysis Reports*. Each school receives a fall 2002 *Test Item Analysis Report* for each content area at each grade level tested (e.g., grade 10 Mathematics). Each report lists, for the school receiving the report, the names of all enrolled students in that grade, and shows how each student answered each common item in that content area. The report identifies each item as multiple-choice, open-response, short-answer, or writing prompt, and identifies the item's MCAS reporting category. Item numbers and MCAS reporting categories in this document correlate directly to the "Item Numbers" in the *Test Item Analysis Reports*.

In addition, this document will assist school and district personnel in interpreting and using the results reported on the *Subject Area Subscore* pages of the fall 2002 *School* and *District Reports*. The *Subject Area Subscore* pages report student results through MCAS reporting categories specific to each content area, and represent the only instance in which MCAS results from both common and matrix-sampled items are combined and reported.

Structure

Each subsequent chapter of this document contains information for one grade level and one content area (e.g., chapter II = Grade 3 Reading). Each of chapters III through V contains English Language Arts information for both the ELA Composition (Section A) and the ELA Language and Literature (Section B) tests for that chapter's grade. Due to copyright restrictions, certain common English Language Arts reading passages that appear in the printed version of this document are not included in the Internet version.

Beginning with chapter II, each chapter contains three main sections. The first section provides a list of the Massachusetts *Curriculum Framework* learning standards assessed by MCAS in that chapter's content area. Learning standards are grouped under their *Framework* content strand headings (study strands for History and Social Science chapters), and applicable *Framework* page numbers are identified. History and Social Science chapters XII and XIII follow their learning standards lists with lists of *Framework* core knowledge topics assessed by MCAS.

The second section of each of these chapters identifies the MCAS reporting categories under which test results in that content area are reported to schools and districts.

The third section of each of these chapters begins with a brief overview (number of test sessions, types of items, reference materials allowed, and cross-referencing information) and then presents all common test items used to generate spring 2002 MCAS student results for that chapter's grade and content area. Each item's reporting category is listed in the shaded bar underneath the item, along with information on the learning standard it assesses. The shaded bar for each History and Social Science item also lists the core knowledge topic assessed by the item, whenever applicable.

Correct answers for all multiple-choice questions are indicated by check marks. Correct answers for short-answer questions are shown in text boxes following the questions.

Reponses to open-response items, and compositions written in response to writing prompts, are scored individually. An overview of procedures for scoring these responses and compositions is presented in the MCAS fact sheet, "Scoring Student Answers to Open-Response Questions and Writing Prompts," which is available on the Department's Internet site at **www.doe.mass.edu/mcas**. Scoring procedures will also be explained further in the MCAS document, *Guide to Interpreting the Spring 2002 Reports for Schools and Districts*, due for release in fall 2002. (Similar *Guides* are currently available on the Department's Internet site for previous years' MCAS *School* and *District Reports*. Sample student responses and compositions from previous MCAS administrations may also be viewed on the Department's Internet site.)

Test materials in this document are shown in the same order in which they were presented in Student Test Booklets. The boxed heading for each group of items indicates the test session within which those items appeared in the spring 2002 Student Test Booklets.

Test materials presented in this document are **not** formatted exactly as they appeared in Student Test Booklets. For instance, in order to present items most efficiently in this document, the following modifications have been made:

- Some fonts and/or font sizes have been changed and/or reduced.
- Some graphics that appeared above questions in Student Test Booklets are shown instead to the side. In these instances, text in the item or in the directions that indicates the position of the graphic may be modified or deleted.
- Most graphics have been reduced in size from their appearance in Student Test Booklets; however, they maintain the same proportions in each case.

Copies of the reference tools provided to and used by students during MCAS Mathematics test sessions (*Mathematics Tool Kits* for grades 4 and 6; *Mathematics Reference Sheets* for grades 6, 8, and 10 and for the Retest) are provided in Appendix A to supplement the Mathematics chapters of this document.

II. Reading, Grade 3

Reading, Grade 3

The spring 2002 Grade 3 MCAS Reading test was based on the learning standards of two content strands of the Massachusetts *English Language Arts Curriculum Framework* (2001):

- Language
- Literature

Curriculum Framework *Learning Standards*

The learning standards for the Language and Literature strands are listed below and are directly quoted from the *Framework*; applicable *Framework* page numbers are shown in parentheses.

Language (*Framework*, pp. 19–26)

Learning Standard 4

Students will understand and acquire new vocabulary and use it correctly in reading and writing.

Learning Standard 5

Students will analyze standard English grammar and usage and recognize how its vocabulary has developed and been influenced by other languages.

Learning Standard 6

Students will describe, analyze, and use appropriately formal and informal English.

Literature (*Framework*, pp. 35–64)

Learning Standard 8

Students will identify the basic facts and main ideas in a text and use them as the basis for interpretation.

Learning Standard 9

Students will deepen their understanding of a literary or non-literary work by relating it to its contemporary context or historical background.

Learning Standard 10

Students will identify, analyze, and apply knowledge of the characteristics of different genres.

Learning Standard 11

Students will identify, analyze, and apply knowledge of theme in a literary work and provide evidence from the text to support their understanding.

Learning Standard 12

Students will identify, analyze, and apply knowledge of the structure and elements of fiction and provide evidence from the text to support their understanding.

Learning Standard 13

Students will identify, analyze, and apply knowledge of the purpose, structure, and elements of nonfiction or informational materials and provide evidence from the text to support their understanding.

Learning Standard 14

Students will identify, analyze, and apply knowledge of the theme, structure, and elements of poetry and provide evidence from the text to support their understanding.

Learning Standard 15

Students will identify and analyze how an author's words appeal to the senses, create imagery, suggest mood, and set tone and provide evidence from the text to support their understanding.

Learning Standard 16

Students will identify, analyze, and apply knowledge of the themes, structure, and elements of myths, traditional narratives, and classical literature and provide evidence from the text to support their understanding.

Learning Standard 17

Students will identify, analyze, and apply knowledge of the themes, structure, and elements of drama and provide evidence from the text to support their understanding.

MCAS Reporting Categories

In *Test Item Analysis Reports* and on the *Subject Area Subscore* pages of the MCAS *School* and *District Reports*, Grade 3 Reading test results are reported under the following two MCAS reporting categories:

- Language
- Literature

MCAS Spring 2002 Common Test Items
Reading, Grade 3

Test Sessions

MCAS Grade 3 Reading Test Booklets included 3 separate test sessions. Each session included selected readings, followed by multiple-choice and open-response questions.

Reference Materials and Tools

No reference materials or tools were allowed during any Grade 3 Reading test session.

Cross-Reference Information

The shaded bar underneath each item indicates the item's MCAS reporting category and which *Framework* learning standard it assesses.

Session 1, Reading Selection #1

Some zoos let people donate money needed to take care of an animal. Read how this helped Rachel get her birthday wish. Answer the questions that follow.

My Own Personal Hippo

by Mary Ellen Bertram

Students read a selection titled "My Own Personal Hippo" and then answered questions 1 through 6 that follow on the next pages of this document. Due to copyright restrictions the passage cannot be released to the public in this document. For more information, see the copyright citation below.

From *Jack and Jill*, copyright © 1989 by Children's Better Health Institute, Benjamin Franklin Literary & Medical Society, Inc., Indianapolis, Indiana. Used by permission.

Session 1, Multiple-Choice Questions

1. This story is MAINLY about a

   Ⓐ hippopotamus who wants to live with a little girl.

   Ⓑ hippopotamus that lives at the zoo.

   Ⓒ little girl who has everything she wants.

   Ⓓ little girl who has a very unusual birthday wish.

   *Reporting Category/*Learning Standard for Item 1: ***Literature/*Learning Standard 11**

2. The *slanted words* in this story show what Rachel

   Ⓐ writes.

   Ⓑ thinks.

   Ⓒ hears.

   Ⓓ sees.

   *Reporting Category/*Learning Standard for Item 2: ***Language/*Learning Standard 8**

3. Rachel's family gives her reasons why a hippo would not be happy living with them. What do they want Rachel to understand?

   Ⓐ how a hippo is like other pets

   Ⓑ what it would cost to have a hippo

   Ⓒ how she should take care of a hippo

   Ⓓ why she cannot have a hippo

   *Reporting Category/*Learning Standard for Item 3: ***Literature/*Learning Standard 12**

❹ What does Rachel do every time someone mentions that having a hippopotamus would cause a problem?

Ⓐ She thinks of a way to solve the problem.

Ⓑ She agrees there is a problem.

Ⓒ She refuses to listen to the problem.

Ⓓ She pretends there is no problem.

*Reporting Category/*Learning Standard for Item 4: ***Literature/*Learning Standard 12**

❺ Why did Rachel's family give money to the zoo in Rachel's name?

Ⓐ They wanted the zoo to take care of the hippo.

Ⓑ They were tired of answering Rachel's questions.

Ⓒ They hoped Rachel would be on television.

Ⓓ They gave Rachel everything she wanted.

*Reporting Category/*Learning Standard for Item 5: ***Literature/*Learning Standard 12**

Read the sentence in the box below.

> But if we move the garden to the side of the house, there'd be plenty of room for the hippo to run.

❻ In this sentence, ***there'd*** stands for

Ⓐ there would.

Ⓑ there had.

Ⓒ there is.

Ⓓ there can.

*Reporting Category/*Learning Standard for Item 6: ***Language/*Learning Standard 5**

Session 2, Reading Selection #1

Many boys and girls have a secret place. Read this poem by Tomie dePaola and learn about a secret place. Answer the questions that follow.

The Secret Place

Students read a selection titled "The Secret Place" and then answered questions 7 through 10 that follow on the next pages of this document. Due to copyright restrictions the passage cannot be released to the public in this document. For more information, see the copyright citation below.

"The Secret Place," copyright © 1986 by Tomie DePaola, from TOMIE DEPAOLA'S BOOK OF POEMS by Tomie dePaola. Used by permission of G.P. Putnam's Sons, an imprint of Penguin Putnam Books for Young Readers , a division of Penguin Putnam Inc.

Session 2, Multiple-Choice Questions

7 One way you can tell "The Secret Place" is a poem is that

Ⓐ all lines rhyme.

Ⓑ it has stanzas.

Ⓒ it is easy to understand.

Ⓓ it has sentences.

Reporting Category/Learning Standard for Item 7: ***Literature*/Learning Standard 10**

8 The pencil in the poem is special because it was

Ⓐ a secret.

Ⓑ broken.

Ⓒ dark.

Ⓓ a gift.

Reporting Category/Learning Standard for Item 8: ***Literature*/Learning Standard 14**

9 The speaker in the poem draws pictures on

Ⓐ a book.

Ⓑ his pillow.

Ⓒ his foot.

Ⓓ the sheets.

Reporting Category/Learning Standard for Item 9: ***Literature*/Learning Standard 14**

10 The word ***grandfather*** is an example of a

Ⓐ compound word.

Ⓑ synonym.

Ⓒ contraction.

Ⓓ homonym.

Reporting Category/Learning Standard for Item 10: ***Language*/Learning Standard 5**

Session 2, Reading Selection #2

Benjamin Franklin was a man who did many things in his lifetime. Read this story about Benjamin Franklin and answer the questions that follow.

A Picture Book of Benjamin Franklin

by David A. Adler

1 Benjamin Franklin was born in Boston, Massachusetts on January 17, 1706. Massachusetts was then one of the thirteen American colonies that belonged to England.

2 There were seventeen Franklin children. Benjamin's father hoped that Benjamin, the tenth and youngest son, would grow up to be a minister.

3 Benjamin always had lots of ideas. When he was still a young boy, he invented swimming paddles that fit over his hands and helped him swim faster.

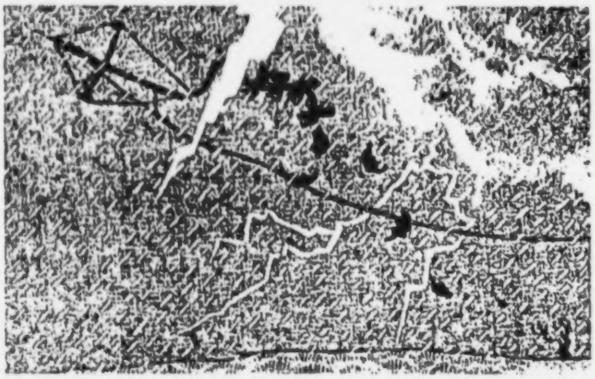
4 Benjamin began school when he was eight years old. He had good handwriting and was an excellent reader, but he did poorly in arithmetic.

5 Benjamin's father did not have enough money to keep him in school. When Benjamin was ten, he began to work in his father's soap-and-candle shop. Benjamin cut wicks, poured hot wax into candle molds, and did errands. He hated the smell of the wax and the boiling soap. He hated making candles.

6 Benjamin wrote poetry. He loved books and reading. So when he was twelve, his father put Benjamin to work in a print shop. The printer and owner of the shop was James Franklin, Benjamin's older brother.

7 James Franklin printed one of the first newspapers in America, *The New England Courant*. Benjamin set type and ran the press. He also wrote clever articles for the newspaper. He signed them *Mistress Silence Dogood* so no one would know who wrote them. James was angry when he found out that his brother was *Silence Dogood*. He refused to print any more of the articles.

8 In 1728, when Benjamin was twenty-two, he set up his own print shop and published a newspaper, *The Pennsylvania Gazette*. Benjamin worked hard. He became the official printer of Pennsylvania. Later he became the official printer for New Jersey, Delaware, and Maryland, too.



9 Once a year, beginning in 1732, Benjamin printed *Poor Richard's Almanack*. At the time, it was the most popular almanac in America. It had information on the weather, recipes, and a calendar of important dates. It also had stories and wise sayings, including "Early to bed, early to rise, makes a man healthy, wealthy, and wise" and "Haste makes waste."

10 Benjamin Franklin helped set up Philadelphia's first fire and police departments. He helped to start the first lending library and the first hospital in America. He was made postmaster of Philadelphia and later postmaster of all thirteen American colonies.

11 Benjamin Franklin invented the Franklin stove. It saved fuel and heated a room better than a fireplace. He invented bifocal glasses and a "long arm" to reach books on high shelves. He also invented the lightning rod that saved many homes from fires.

12 Benjamin Franklin was very interested in electricity. In one dangerous experiment, he flew a kite in a thunderstorm. When lightning struck the kite, sparks flew from a key attached to the string. Benjamin had proved that lightning is electricity.

13 In 1765 Benjamin went to England. He spoke at the English House of Commons against the Stamp Act, a tax which the American colonists felt was unfair. Franklin helped to convince the English to end the tax.

14 Benjamin Franklin remained in England for ten years. He told the English king and his advisors to give people in the thirteen colonies more rights and freedom. But the king refused.

15 Benjamin Franklin returned to the colonies in 1775, soon after the beginning of the American Revolution. He was at the Second Continental Congress and was chosen to help write the Declaration of Independence.

Text copyright © 1990 by David A. Adler. All rights reserved. Reprinted from A PICTURE BOOK OF BENJAMIN FRANKLIN by permission of Holiday House, Inc.

Session 2, Multiple-Choice Questions

11 Benjamin Franklin is known as both

Ⓐ candle-maker and librarian.

Ⓑ policeman and inventor.

Ⓒ fireman and postmaster.

Ⓓ printer and inventor.

*Reporting Category/*Learning Standard for Item 11: ***Literature/*****Learning Standard 8**

12 According to this selection, Benjamin Franklin's father put him to work in a print shop because he

Ⓐ was the youngest son.

Ⓑ loved books and reading.

Ⓒ had good handwriting.

Ⓓ wanted to be a minister.

*Reporting Category/*Learning Standard for Item 12: ***Literature/*****Learning Standard 8**

Read the sentence in the box below.

> He also wrote clever articles for the newspaper.

13 The word ***clever*** means

Ⓐ smart and funny.

Ⓑ old fashioned.

Ⓒ long and boring.

Ⓓ science fiction.

*Reporting Category/*Learning Standard for Item 13: ***Language/*****Learning Standard 4**

⓮ What did Benjamin Franklin do to become successful by the time he was 22?

Ⓐ He ran his own printing business.

Ⓑ He invented swimming paddles.

Ⓒ He worked for his brother.

Ⓓ He made soap and candles.

Reporting Category/Learning Standard for Item 14: ***Literature*/Learning Standard 8**

⓯ In paragraph 9, the author states that Benjamin Franklin is well known for writing *Poor Richard's Almanack*. An almanac is a book of

Ⓐ useful information.

Ⓑ witty sayings.

Ⓒ maps and charts.

Ⓓ scientific words.

Reporting Category/Learning Standard for Item 15: ***Literature*/Learning Standard 8**

⓰ At the time of the American Revolution, Benjamin Franklin was chosen to

Ⓐ be postmaster of the American colonies.

Ⓑ help write the Declaration of Independence.

Ⓒ go to England to meet with the king.

Ⓓ conduct experiments with electricity.

Reporting Category/Learning Standard for Item 16: ***Literature*/Learning Standard 8**

17 In this biography, the author tells events and ideas in what order?

Ⓐ in order of importance, from most to least important

Ⓑ in order from his old age to his youth

Ⓒ in the order in which they happened

Ⓓ in the order in which they were remembered

*Reporting Category/*Learning Standard for Item 17: ***Literature*/Learning Standard 13**

18 From reading about Benjamin Franklin's life, you can tell that he was a man who

Ⓐ did not have many friends.

Ⓑ was intelligent but poor.

Ⓒ traveled to many places in England.

Ⓓ did many important things.

*Reporting Category/*Learning Standard for Item 18: ***Literature*/Learning Standard 13**

Session 2, Open-Response Question

19 Explain why Benjamin Franklin is famous. Use information from the story to support your answer.

*Reporting Category/*Learning Standard for Item 19: ***Literature/*Learning Standard 13**

Session 2, Reading Selection #3

Learning to farm in North America took the Native Americans many years. As you read this article, think about how Native Americans used their natural resources. Answer the questions that follow.

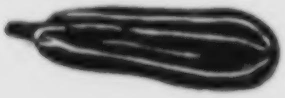
Planting and Tending Crops

1 Over thousands of years, the people of North America learned how to farm. Corn, beans, and squash became staples in the South and East. The Iroquois called these plants the "three sisters" because they planted them together. First, they planted corn kernels and piled earth over them. Then they added squash and bean seeds to this mound. When the corn grew, the stalk held up the bean plants and the squash vines.

2 Many other crops, like sunflowers and amaranth, were also grown. Every region had its own way of planting, caring for, harvesting, and storing their crops.

3 Many kinds of tools were used in the fields. Along the East Coast, shells were turned into hoes. On the Plains, women hoed with the bone of the shoulder blade of a buffalo fastened to a stick. In the Southwest, where men worked the fields, smoothed stone blades were used.

4 In the dry Southwest, water was brought to the fields in ditches connected to a stream or spring. If the area was too dry for irrigation, everyone carried water to the plants in clay pots.



"Planting and Tending Crops" by Jay Miller
© 1996 Children's Press, Grolier Publishing

Session 2, Multiple-Choice Questions

20 The Iroquois planted the corn kernels, squash seeds, and bean seeds together because

Ⓐ squash and beans do not need to be planted as deeply as corn.

Ⓑ corn kernels are good fertilizer for the squash and beans.

Ⓒ corn stalks hold up the squash vines and bean plants.

Ⓓ squash and beans need more light than corn.

Reporting Category/Learning Standard for Item 20: ***Literature/Learning Standard 8***

21 Reread paragraph 1. What words in that paragraph tell you the order in which the Native Americans planted the vegetables?

Ⓐ so, first

Ⓑ first, second

Ⓒ soon, then

Ⓓ first, then

Reporting Category/Learning Standard for Item 21: ***Literature/Learning Standard 13***

22 The words "East Coast," "Plains," and "Southwest" start with CAPITAL LETTERS because they are

Ⓐ common nouns.

Ⓑ proper nouns.

Ⓒ verbs.

Ⓓ adjectives.

Reporting Category/Learning Standard for Item 22: ***Language/Learning Standard 5***

Session 3, Reading Selection #1

When Mary and Tom plant a garden, they make a big discovery. Read the story to find out what they discover and then answer the questions that follow.

The Peanut Patch

by Eileen Van Kirk

Mary and Tom waved as their uncle pulled into the driveway of their new house.

"How do you like living down here in Georgia?" asked Uncle Jed, climbing out of his pickup truck.

"It's nice," said Mary. "But it's different."

"It's not like being back in Vermont," agreed Tom.

"Why don't you plant a garden?" suggested Uncle Jed. "Nothing like a garden to help you get the feel of a new place."

"What should we plant?" asked Mary.

"How about peanuts?" suggested Uncle Jed. "They're different from anything you can grow in Vermont."

"That's a great idea," said Tom.

So Tom and Mary staked out a sunny patch in the garden and began to dig. When they had the earth nice and crumbly, they planted five rows of peanuts. They raked the earth smooth and put up a sign that said THE PEANUT PATCH.

They took good care of their garden. They watered it when it was dry and kept it free of weeds and bugs. Then one day bright green shoots poked their way out of the ground. Soon the shoots grew into vines with lots of yellow flowers.

"How are the peanuts coming?" asked Uncle Jed.

"Fine," said Tom. "We've seen lots of flowers, and that must mean lots of peanuts."

"But the plants do keep drooping onto the ground," said Mary.

"That's all right," said her uncle. "They all do that. When you harvest your peanuts I'll show you how to make a rack to dry them on."

But days went by and there were no peanuts to be seen. All the flowers were gone by now and the leaves were beginning to wilt, but they did not find one peanut. One day Uncle Jed asked if they were ready to build the drying rack."

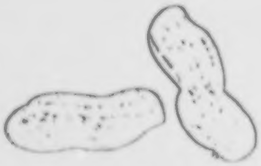
"There's no need," said Tom. "We haven't got any peanuts to dry."

"Are you sure?" said Uncle Jed.

"Come and see for yourself," said Tom. The three of them trooped over to the peanut patch. Mary and Tom showed Uncle Jed the bare vines.

"Well, that's too bad," said Uncle Jed. But there was a twinkle in his eye, and he seemed more amused than sorry. "I guess the only thing for you to do is dig them up."

When he'd left, Tom picked up the garden fork. "I don't see what's so funny," Tom said crossly. "But we might as well get rid of these useless things." He uprooted a large peanut plant and tossed it into the wheelbarrow.



"Hey," said Mary. "Shake the earth off first, or this wheelbarrow will be too heavy to push." She picked up the plant, and then she gasped.

"Tom, look!" exclaimed Mary. "Peanuts! Lots and lots of peanuts."

Tom looked at the plant Mary was holding. Clusters of fat peanuts clung to stems that had grown down from the vines and burrowed beneath the soil.

"You mean peanuts grow under the ground?" cried Tom.

"It sure looks like it," said Mary. They both began to laugh.

"Uncle Jed, Uncle Jed," they cried as they ran into the house. "We found the peanuts."

Uncle Jed grinned. "I told you they were different from anything that grew in Vermont!"

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Session 3, Multiple-Choice Questions

23 This story is MAINLY about two children who

Ⓐ learn to grow vegetables.

Ⓑ learn something new.

Ⓒ make new friends.

Ⓓ want to move.

*Reporting Category/*Learning Standard for Item 23: ***Literature/Learning Standard 11***

24 Where does this story take place?

Ⓐ a new home in Vermont

Ⓑ Uncle Jed's home in Vermont

Ⓒ Uncle Jed's home in Georgia

Ⓓ a new home in Georgia

*Reporting Category/*Learning Standard for Item 24: ***Literature/Learning Standard 12***

25 The MAIN reason Uncle Jed wants the children to plant a garden is to

Ⓐ get his garden planted on time.

Ⓑ help them get used to their new home.

Ⓒ give them time to relax.

Ⓓ remind them of Vermont.

*Reporting Category/*Learning Standard for Item 25: ***Literature/Learning Standard 8***

26 Why does Uncle Jed tell the children to dig the peanut plants up?

Ⓐ He thinks no peanuts grew in their garden.

Ⓑ He thinks he is being funny.

Ⓒ He knows they will find the peanuts.

Ⓓ He wants them to start another garden.

*Reporting Category/*Learning Standard for Item 26: ***Literature/*Learning Standard 12**

Read the sentence in the box below.

But there was a twinkle in his eye, and he seemed more amused than sorry.

27 This sentence tells you that Uncle Jed

Ⓐ cannot believe his eyes.

Ⓑ thinks peanuts grow above ground.

Ⓒ knows what will happen next.

Ⓓ is feeling unhappy.

*Reporting Category/*Learning Standard for Item 27: ***Literature/*Learning Standard 12**

28 What was the surprise the children got from growing the peanuts?

Ⓐ Peanuts grow underground.

Ⓑ Peanuts begin as yellow flowers.

Ⓒ Their plants didn't grow any peanuts.

Ⓓ Their plants looked like peanut plants in Vermont.

*Reporting Category/*Learning Standard for Item 28: ***Literature/*Learning Standard 8**

Read the sentence in the box below.

> Mary and Tom showed Uncle Jed the bare vines.

29 In this sentence, ***Mary and Tom*** is

Ⓐ the subject of the sentence.

Ⓑ the verb in the sentence.

Ⓒ an adjective.

Ⓓ an adverb.

Reporting Category/Learning Standard for Item 29: ***Language*/Learning Standard 5**

Read the sentence in the box below.

> He uprooted a large peanut plant and tossed it into the wheelbarrow.

30 The word ***uprooted*** in this sentence means

Ⓐ pushed.

Ⓑ pulled out.

Ⓒ mowed under.

Ⓓ fertilized.

Reporting Category/Learning Standard for Item 30: ***Language*/Learning Standard 4**

Session 3, Open-Response Question

31 Describe FOUR steps that happen when a peanut plant grows. Be sure to write the steps in order. Use specific information from the story in your answer.

1. ____________________

2. ____________________

3. ____________________

4. ____________________

*Reporting Category/*Learning Standard for Item 31: ***Literature/*Learning Standard 8**

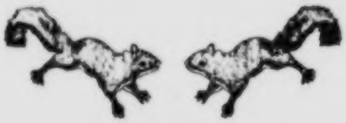
Session 3, Reading Selection #2

You are going to read about two kinds of squirrels that live in the subarctic. After you read the article, answer the questions that follow.

Squirrels

There are two kinds of tree squirrels in the northern forests, but they don't meet very often.

Red squirrels, pictured below, are daytime squirrels. They spend the summer and fall building huge storage nests of seeds. In the winter, families cuddle together in a hollow tree and wrap their fluffy tails around themselves for warmth. Young red squirrels like to play games with their brothers and sisters. Favorite squirrel games are pinecone toss and hide-and-seek. The kits like to play chase and have climbing contests too.



Flying squirrels are nighttime squirrels. Their name is a little joke. Squirrels can't really fly. They glide very well, though. Mother squirrel is the flight instructor and the leader of the family gliding games. The newborn babies aren't old enough to begin lessons, but a six-week-old kit has already learned how to do loops and spirals.

Squirrel
(Red Squirrel and Northern Flying Squirrel)

- Baby name: Kit
- Birthplace: Leaf-lined nest in a hollow tree
- Birth weight: Flying squirrel, 1/10 ounce; red squirrel, 1/4 to 1/2 ounce
- Adult weight: Flying squirrel, 5 ounces; red squirrel, 3 pounds
- Littermates: Flying squirrel, 1 or 2; red squirrel, an average of 5 but could be as many as 10
- Favorite food: Babies drink milk; adults eat pine seeds, nuts, tree bark, and buds.
- Parent care: Babies are cared for by mother and live in a nest shared by a large family. Everybody cuddles together for warmth.
- Enemies: Flying squirrel's enemies are owls, lynx; red squirrel's are hawks, lynx, wolverine. In addition, both are prey of the pine marten, a kind of weasel.
- Home: Pine forests of the taiga* throughout the Arctic

* taiga — evergreen forests of subarctic land

From ARCTIC BABIES Copyright © 1996 by Kathy Darling. Reprinted with permission from Walker & Company, 435 Hudson Street, New York, NY 10014. All rights reserved.

Session 3, Multiple-Choice Questions

32 What is the MAIN IDEA of this article?

Ⓐ Both kinds of squirrels are very different from other animals.

Ⓑ Red squirrels and flying squirrels do not get along together.

Ⓒ Squirrels' babies are cared for by the mother and live in a nest shared by the family.

Ⓓ Red squirrels and flying squirrels are alike and different.

Reporting Category/Learning Standard for Item 32: ***Literature/Learning Standard 8***

33 Red squirrels and flying squirrels do not see each other often because

Ⓐ flying squirrels do not live in trees but red squirrels do.

Ⓑ red squirrels are daytime squirrels and flying squirrels are nighttime squirrels.

Ⓒ red squirrels and flying squirrels are bitter enemies.

Ⓓ red squirrels have time to play but flying squirrels have work to do.

Reporting Category/Learning Standard for Item 33: ***Literature/Learning Standard 8***

34 According to this article, why is the name flying squirrels a "little joke"?

Ⓐ They like to do loops and spirals.

Ⓑ They only weigh 5 ounces when adults.

Ⓒ They cannot really fly.

Ⓓ They like to toss pinecones.

Reporting Category/Learning Standard for Item 34: ***Literature/Learning Standard 8***

㉟ Which of the following is a complete sentence?

Ⓐ In the winter for warmth and because they like to play chase.

Ⓑ Leaf-lined nest in a hollow tree.

Ⓒ Cuddled together in a hollow tree in the winter.

Ⓓ Favorite squirrel games are pinecone toss and hide-and-seek.

Reporting Category/Learning Standard for Item 35: ***Language*/Learning Standard 5**

㊱ The MAIN reason the chart is printed with the article is to

Ⓐ give instructions for the care of both kinds of squirrels.

Ⓑ tell you basic facts about both kinds of squirrels.

Ⓒ describe how squirrels live.

Ⓓ make you interested in squirrels.

Reporting Category/Learning Standard for Item 36: ***Literature*/Learning Standard 13**

Session 3, Reading Selection #3

You are going to read a story about a boy who takes care of sheep. Read the story and then answer the questions that follow.

THE SHEPHERD BOY

A shepherd boy had the job of taking the sheep to their grassy pasture each day and guarding them from wolves who might eat them.

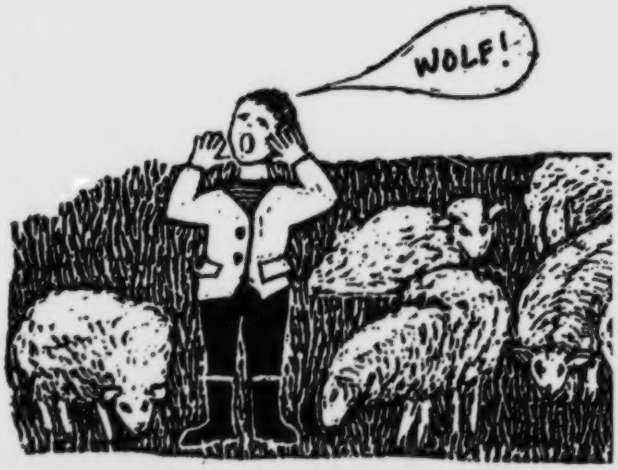
It was an easy job. The boy sat among the rocks and played his flute as he watched the sheep.

One day the shepherd boy became bored. To liven things up, he decided to play a trick on the farmers who were his neighbors.

"Wolf! Wolf!" cried the boy in a scared voice.

"We must save the sheep! We must help the shepherd boy!" the farmers shouted as they ran to the pasture.

"I fooled you! I fooled you!" laughed the shepherd boy. Grumbling, the farmers went home.



The next day, the shepherd boy played the same trick. He cried, "Wolf! Wolf!" and laughed to see his neighbors leaving their work behind and running up the hill to help.

"Fooled you again!" laughed the boy. Grumbling, the farmers went home.

But the very next day, a wolf really did come to the pasture and began to chase and eat the sheep.

"Wolf! Wolf!" hollered the frightened boy, for he couldn't fight the wolf off alone.

His neighbors heard him shouting, but said to one another, "Let's not pay any attention. It's only the silly shepherd boy trying to trick us again."

And they went on with their plowing.

So the wolf ate well that day.

From MULTICULTURAL FABLES AND FAIRY TALES by Tara McCarthy.
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Session 3, Multiple-Choice Questions

37 This story takes place in a

Ⓐ small city.

Ⓑ dark forest.

Ⓒ park.

Ⓓ pasture.

Reporting Category/Learning Standard for Item 37: ***Literature/Learning Standard 8***

38 At the beginning of the story, how did the shepherd boy spend most of his time?

Ⓐ playing his flute

Ⓑ tricking the wolf

Ⓒ reading fairy tales

Ⓓ throwing stones

Reporting Category/Learning Standard for Item 38: ***Literature/Learning Standard 8***

39 The first time the shepherd boy cried "Wolf! Wolf!" the farmers

Ⓐ ignored him.

Ⓑ were afraid of him.

Ⓒ helped him.

Ⓓ yelled back at him.

Reporting Category/Learning Standard for Item 39: ***Literature/Learning Standard 8***

Read the sentence in the box below.

> "Wolf! Wolf!" cried the boy in a scared voice.

㊵ The punctuation mark that comes after the word *Wolf* is

Ⓐ a comma.

Ⓑ a period.

Ⓒ a question mark.

Ⓓ an exclamation mark.

Reporting Category/Learning Standard for Item 40: ***Language/Learning Standard 5***

㊶ You know the farmers were not happy about the shepherd boy's joke because they

Ⓐ cried.

Ⓑ complained.

Ⓒ shouted.

Ⓓ laughed.

Reporting Category/Learning Standard for Item 41: ***Literature/Learning Standard 16***

Read the sentence in the box below.

"Let's not pay any attention."

42 In this sentence, the contraction *Let's* stands for

Ⓐ Let them.

Ⓑ Let she.

Ⓒ Let us.

Ⓓ Let him.

Reporting Category/Learning Standard for Item 42: **Language/Learning Standard 5**

III. English Language Arts, Grade 4

A. Composition
B. Language and Literature

English Language Arts, Grade 4

A. Composition

The spring 2002 Grade 4 MCAS English Language Arts Composition test was based on the learning standards of the Composition strand of the Massachusetts *English Language Arts Curriculum Framework* (2001).

Curriculum Framework *Learning Standards*

The learning standards for the Composition strand are listed below and are directly quoted from the *Framework*; applicable *Framework* page numbers are shown in parentheses.

Composition (*Framework*, pp. 72–83)

Learning Standard 19

Students will write with a clear focus, coherent organization, and sufficient detail.

Learning Standard 20

Students will write for different audiences and purposes.

Learning Standard 21

Students will demonstrate improvement in organization, content, paragraph development, level of detail, style, tone, and word choice (diction) in their compositions after revising them.

Learning Standard 22

Students will use knowledge of standard English conventions in their writing, revising, and editing.

MCAS Reporting Category

In *Test Item Analysis Reports* and on the *Subject Area Subscore* pages of the MCAS *School* and *District Reports*, ELA Composition test results are reported under the MCAS reporting category of Composition.

MCAS Spring 2002 Common Test Items
ELA Composition, Grade 4

Test Sessions

MCAS ELA Composition Student Test Booklets included 2 separate test sessions, administered on the same day with a short break between sessions. During the first session, each student wrote a first draft of a composition in response to the following writing prompt. During the second session, each student revised his/her first draft and submitted his/her second draft for scoring.

Reference Materials and Tools

At least one dictionary per classroom was provided for student use during ELA Composition test sessions. No other reference materials or tools were allowed during either ELA Composition test session.

Cross-Reference Information

The shaded bar following the writing prompt indicates this item's MCAS reporting category and which *Framework* learning standards it assesses.

Grade 4 Writing Prompt

WRITING PROMPT

All of us have had a special time or adventure in our lives. It could be anything such as a visit with a friend or relative, a party you went to, or a game you watched or played. Or it could be something completely different.

Write a story about a special time or adventure that you have had. Give enough details in your story to show what it was like and what made it so special.

You may use the space below to plan what you are going to write (notes, outlines, other prewriting activities).

*Reporting Category/*Learning Standard for Writing Prompt: ***Composition/*****Learning Standards 19-22**

Grade 4 Make-Up Writing Prompt

WRITING PROMPT

Summer is a special time when children get to do fun things. You have more time during the day to choose activities that you enjoy doing with your friends or family, outdoors or indoors. There are many different ways to have fun in the summer. What's yours?

Write a story about your favorite summer activity. Give enough details in your story to show what you were doing and what made this your favorite activity.

You may use the space below to plan what you are going to write (notes, outline, other prewriting activities).

Reporting Category/Learning Standard for Make-Up Writing Prompt: ***Composition*****/Learning Standards 19-22**

English Language Arts, Grade 4
B. Language and Literature

The spring 2002 Grade 4 MCAS English Language Arts Language and Literature test was based on the learning standards of two content strands of the Massachusetts *English Language Arts Curriculum Framework* (2001):

- Language
- Literature

Curriculum Framework *Learning Standards*

The learning standards for the Language and Literature strands are listed below and are directly quoted from the *Framework*; applicable *Framework* page numbers are shown in parentheses.

Language (*Framework*, pp. 19–26)

Learning Standard 4

Students will understand and acquire new vocabulary and use it correctly in reading and writing.

Learning Standard 5

Students will analyze standard English grammer and usage and recognize how its vocabulary has developed and been influenced by other languages.

Learning Standard 6

Students will describe, analyze, and use appropriately formal and informal English.

Literature (*Framework*, pp. 35–64)

Learning Standard 8

Students will identify the basic facts and main ideas in a text and use them as the basis for interpretation.

Learning Standard 9

Students will deepen their understanding of a literary or non-literary work by relating it to its contemporary context or historical background.

Learning Standard 10

Students will identify, analyze, and apply knowledge of the characteristics of different genres.

Learning Standard 11

Students will identify, analyze, and apply knowledge of theme in a literary work and provide evidence from the text to support their understanding.

Learning Standard 12

Students will identify, analyze, and apply knowledge of the structure and elements of fiction and provide evidence from the text to support their understanding.

Learning Standard 13

Students will identify, analyze, and apply knowledge of the purpose, structure, and elements of nonfiction or informational materials and provide evidence from the text to support their understanding.

Learning Standard 14

Students will identify, analyze, and apply knowledge of the theme, structure, and elements of poetry and provide evidence from the text to support their understanding.

Learning Standard 15

Students will identify and analyze how an author's words appeal to the senses, create imagery, suggest mood, and set tone and provide evidence from the text to support their understanding.

Learning Standard 16

Students will identify, analyze, and apply knowledge of the themes, structure, and elements of myths, traditional narratives, and classical literature and provide evidence from the text to support their understanding.

Learning Standard 17

Students will identify, analyze, and apply knowledge of the themes, structure, and elements of drama and provide evidence from the text to support their understanding.

MCAS Reporting Categories

In *Test Item Analysis Reports* and on the *Subject Area Subscore* pages of the MCAS *School* and *District Reports*, ELA Language and Literature test results are reported under the following two MCAS reporting categories:

- Language
- Literature

MCAS Spring 2002 Common Test Items
ELA Language and Literature, Grade 4

Test Sessions

MCAS ELA Language and Literature Student Test Booklets included 3 separate test sessions. Each session included selected readings, followed by multiple-choice and open-response questions.

Reference Materials and Tools

No reference materials or tools were allowed during any ELA Language and Literature test session.

Cross-Reference Information

The shaded bar underneath each item indicates the item's MCAS reporting category and which *Framework* learning standard it assesses.

Session 1, Reading Selection #1

Bottles are used for many purposes. Read this selection about messages sent in bottles. Use information from the selection to answer the questions that follow.

A Message from the Sea

from *Drift Bottles in History and Folklore*
by Dorothy B. Francis

1 For ages people have tossed message bottles into the sea. Sometimes these bottles are called drift bottles. They also are called *drogues*. A drogue is another name for a container used at sea.

2 Ancient Greeks learned about water currents by using drift bottles. One Greek writer wrote of using drogues in 300 B.C. He stood on a seawall in Athens. From there, he dropped drift bottles into the water. Each bottle carried a message. The message asked the finder to contact the writer. These bottles helped him learn about the flow of sea currents.

. . .

3 Sometimes people on a sinking ship toss a message into the sea. Their drogue may be a cry for help. Or it may just be an account of the disaster. The victim may want people to know exactly what happened. His message may concern himself, his friends, and his ship.

4 One man aboard the British transport ship *Kent* wrote of its disaster. Major Duncan MacGregor knew his ship was in big trouble. It was going down. Nothing short of a miracle could save it. He doubted that anyone would survive to tell the tale.

5 He wrote an account of the wreck. Hoping someone would find it, he launched his story sealed in a bottle. Luckily, rescuers reached Major MacGregor. Once he was saved, his message bottle seemed less important. He was able to tell his story in person.

6 Major MacGregor lived in Barbados. He seldom thought of the bottle he had cast into the waves. But nine years after the *Kent* disaster, a servant approached him. The servant carried a bottle. Inside it was the message the major had tossed into the sea.

7 Believe it or not, the bottle had traveled more than 5,000 miles. It had washed ashore close to the major's doorstep. The sea takes. And the sea returns.

"A Message from the Sea" by Dorothy B. Francis from DRIFT BOTTLES IN HISTORY AND FOLKLORE © 1990 by Ballhoo Books.

Session 1, Multiple-Choice Questions

1. What did the ancient Greeks learn from the use of drift bottles?

A. the height of the tide

B. the way the sea level changes

C. the times of the tides

D. the way the currents flow

Reporting Category/Learning Standard for Item 1: ***Literature*/Learning Standard 8**

2. Major MacGregor threw a bottle into the sea because he wanted

A. a miracle to happen.

B. his story to be told.

C. to check the sea's currents.

D. to mark the disaster's location.

Reporting Category/Learning Standard for Item 2: ***Literature*/Learning Standard 13**

3. What is the MAIN reason that it took nine years for Major MacGregor's bottle to be found by his servant?

A. It had sunk in the water.

B. It had traveled 5,000 miles.

C. It went down with the ship.

D. It was not seen by anyone.

Reporting Category/Learning Standard for Item 3: ***Literature*/Learning Standard 13**

4. What was so surprising about Major MacGregor's servant finding his bottle?

A. The bottle was full of sand and water.

B. The bottle was found near Major MacGregor's home.

C. The message was written in a foreign language.

D. The message was missing from the bottle.

Reporting Category/Learning Standard for Item 4: ***Literature*/Learning Standard 13**

⑤ Why was the message in Major MacGregor's bottle no longer important?

A. He lived to tell his own story.
B. The bottle was lost at sea.
C. His servant found the bottle.
D. He forgot about writing the message.

Reporting Category/Learning Standard for Item 5: ***Literature/Learning Standard 13***

⑥ The word ***Kent*** is italicized (slanted print) in this selection to show that it is the name of

A. a book.
B. a bottle.
C. a captain.
D. a ship.

Reporting Category/Learning Standard for Item 6: ***Language/Learning Standard 5***

Session 1, Open-Response Question

⑦ According to the selection, drogues have two important uses. Describe ONE use and give information from the selection to support your answer.

Reporting Category/Learning Standard for Item 7: ***Literature/Learning Standard 8***

Session 1, Reading Selection #2

Often, little brothers and sisters can be very helpful to each other. Read this selection about how Kelly's little sister helped him with the clam tide. Use information from the selection to answer the questions that follow.

Clam Tide

by Kristine L. Franklin

1 "Clam tide!" my brother yelled as he leaped out of bed and threw on his clothes. I got up and peeked out the window. The water was so far out that it looked like a shiny silver line beyond the beach.

2 "Can I go?" I asked, stifling a yawn and trying hard to look wide awake.

3 "Naw," he said. He laced up his old tennis shoes. "It's hard work, and you're too little." The door banged as he rushed out.

4 "Mama-a-a!" I hollered in my loudest, saddest voice. "Kelly won't take me clam digging." I started to cry because I was disappointed, but mostly because I was mad at my brother.

5 Soon I was following him down to the tide flats. I had to walk fast, because now my brother was mad at me. He swung the bucket in one hand and held the clam shovel in the other, and I could tell by the way he took giant steps that he wished I was home. But Mom had said I could go.

6 "Hurry up," he said, without turning around. "The tide won't stay out all day, you know." When we got to the edge of the beach, the ground was covered with rocks and smelled like rotten seaweed and dead barnacles. We hiked down the slope toward the water.

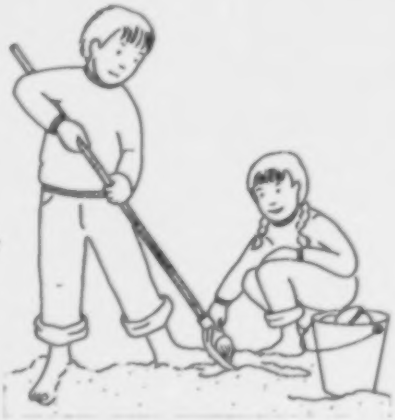
7 Beyond the rocky beach the tide flats were muddy. It was the oozy kind of mud that sucks off your shoes if you stand too long in one place. I had a hard time hurrying through that stuff, and so did Kelly. Once, he had to stop and slowly, carefully pull his foot up so he wouldn't lose a shoe. I giggled at the sound it made coming out. My brother gave me a nasty look.

8 After that his feet kept getting stuck, so he tried tiptoeing across the mud. Next he tried hopping. Then he tried running fast with little tiny steps. I followed him, imitating everything he did.

9 By the time we got to the clam-digging place, we were covered with blobs and splatters and teeny freckles of stinky black mud. My side hurt. I don't know if it was from running or from too much laughing.

10 Kelly put one foot on the clam shovel and pushed it hard into the mud. "When I bring up a shovelful, your job is to look for clams." My brother liked to give me jobs. He heaved a huge, dripping pile of muck in front of me. It plopped all over my shoes.

11 I stuck my hands into the mess and began feeling for the hard little clams. "Got one!" I said. I rinsed off my prize in clean salt water. Kelly kept digging and plopping down the piles.



12 Clam by clam, the bucket began to fill. I was choosy about which ones to keep. If they were too big or too little, I tossed them into the shallow water nearby. The big ones splashed my brother.

13 "How many clams is that?" Kelly asked me as he flung down an especially gooey load.

14 "Fifty-three," I said. There was a rule that each person could only take thirty clams a day, so I was counting them. I felt through the new pile for a few more.

15 Now I was kneeling in three inches of water, separating clams from rocks as fast as I could. "The tide is coming in," I said. My brother pretended to ignore me, but worked a little faster. His feet and legs were sunk down into the mud, and it made him look short. The water in the hole he had made was getting deeper.

16 "That's sixty," I said, tossing the last clam into the bucket. "Thirty for you, thirty for me. Let's go." I looked at my big brother and suddenly realized he was scared. *Very* scared.

17 "I'm stuck," he said. He was trying to sound brave.

18 "Pull one foot up and then the other." The water around my own ankles made me nervous.

19 "I already tried it." He squirmed and tried it again. The more he moved, the deeper he went.

20 "Dig in your shovel, and pull yourself out," I said. He tried it. The shovel fell over.

21 "It's too mushy. It won't work!" He didn't sound brave anymore. I looked around frantically for firm ground away from the hole and the loose mud. I wished I was big enough to pull him out. I wished it was me stuck in the mud instead of Kelly.

22 A few feet away, the ground wasn't as gooey. The water came to just above my ankles. I quickly skinned off my jeans and stood there in my bathing suit.

23 "What are you doing? Are you crazy?" Now my brother's voice sounded funny. He was crying. I threw him the legs of my jeans.

24 "You pull on that end, and I'll pull on this end." I took hold of the top end.

25 "You're not strong enough!" he cried. "I'll pull you over." But then he tried. I didn't fall over. I sank down into the mud.

26 "Keep pulling!" I screamed at him. It took a while, but soon I could see it was working. Kelly was climbing hand over hand, up my jeans and out of his hole, and I was sinking farther into mine. I held on. The water crept up around my hips.

27 "Yahhhh!" Kelly yelled as he pulled free. He scrambled up and got his footing. He took two big splashing steps and stood above me. "It's OK. Don't be scared."

28 My brother grabbed me under the arms and pulled so hard it hurt. For one horrible second, nothing happened. Then the mud let go.

29 He lifted me up and hugged me. He pressed his cheek against mine, and all our tears and dirty freckles smeared together. "Let's get away from here," he said. He carried me out of the water and beyond the reach of the tide.

30 Kelly put me down gently and started across the flats. This time I didn't walk behind him, and we didn't hurry. The bucket, the clams, the shovel, my old blue jeans—all were lost and forgotten.

31 We didn't talk much on the way home, but we squeezed hands a couple of times and grinned a lot. Whenever one of our feet got stuck in the mud, we laughed together at the funny sound it made coming out.

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Session 1, Multiple-Choice Questions

⑧ Why did Kelly not want his sister to go clamming with him?

A. He would have to share his clams with her.
B. He thought she would tell where he dug his clams.
C. He was afraid that she would get hurt.
D. He thought she was too little and could not help.

*Reporting Category/*Learning Standard for Item 8: ***Literature/*Learning Standard 8**

⑨ Reread paragraph 7. Which word BEST describes the "tide flats"?

A. grassy
B. steep
C. slippery
D. gooey

*Reporting Category/*Learning Standard for Item 9: ***Literature/*Learning Standard 15**

⑩ According to this selection, why was the little sister "choosy" about the clams?

A. She wanted only the big clams.
B. She could only carry one bucket at a time.
C. Many of the clams were dirty.
D. There was a limit on the number they could keep.

*Reporting Category/*Learning Standard for Item 10: ***Literature/*Learning Standard 12**

⑪ The author describes the mud on the children as

A. freckles.
B. muck.
C. barnacles.
D. seaweed.

*Reporting Category/*Learning Standard for Item 11: ***Literature/*Learning Standard 15**

(12) According to this selection, why did Kelly get stuck in the mud?

A. He dug too many clams.

B. He fell into a clam hole.

C. The bucket weighed too much.

D. The tide was coming in.

*Reporting Category/*Learning Standard for Item 12: ***Literature/*****Learning Standard 12**

(13) Other words for a ***clam tide*** are

A. high tide.

B. low tide.

C. rip tide.

D. red tide.

*Reporting Category/*Learning Standard for Item 13: ***Language/*****Learning Standard 4**

(14) You MIGHT find another selection like "Clam Tide" in a book of

A. tall tales.

B. fairy tales.

C. ancient myths.

D. realistic fiction.

*Reporting Category/*Learning Standard for Item 14: ***Literature/*****Learning Standard 10**

Read the sentence in the box below.

> The water came to just above my ankles.

⑮ The SUBJECT of this sentence is

A. water.

B. came.

C. above.

D. ankles.

Reporting Category/Learning Standard for Item 15: ***Language*/Learning Standard 5**

Session 1, Open-Response Question

(16) Kelly's feelings toward his sister changed at the end of this story. Describe how they changed and tell why. Use specific details from the selection in your answer.

Reporting Category/Learning Standard for Item 16: ***Literature/Learning Standard 12***

Session 1, Reading Selection #3

Read this poem about December. Use information from the poem to answer the questions that follow.

December Days Are Short

December days are short, and so
there's not much time to play,
the fun has hardly started
when the sun has gone away.

Today, right after breakfast,
while the sky was growing light,
I ran to meet my friends outside
and have a snowball fight.

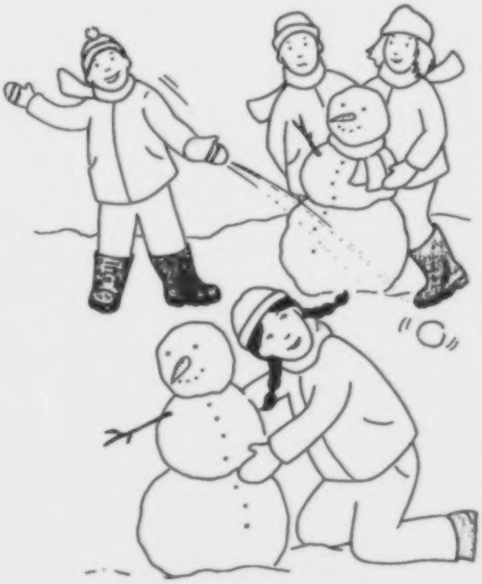
We began to build a fortress
then raced our wooden sleds,
we belly-whopped and spun like tops
and tumbled on our heads.

We stopped for lunch, then once again
threw snowballs for a while,
we made a giant snowman
with a really silly smile.

We fed some hungry pigeons
and went sliding on the ice,
my mother brought some cake for us,
a dog ate half my slice.

We made another snowman
and we finished off our fort,
then suddenly, the sun went down...
December days are short.

—Jack Prelutsky



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Session 1, Multiple-Choice Questions

(17) The reader can tell from the poem that the weather is cold because

A. the children stopped for lunch.

B. the mother brought some cake.

C. the children slid on the ice.

D. there is not much time to play.

*Reporting Category/*Learning Standard for Item 17: ***Literature/*Learning Standard 14**

(18) According to the poem, the MAIN problem with playing outside in December is that

A. the days are long.

B. there is too much snow on the ground.

C. there are not enough hours of daylight.

D. the sun melts the ice.

*Reporting Category/*Learning Standard for Item 18: ***Literature/*Learning Standard 14**

(19) The rhyming pattern in each stanza is

A. first and third lines rhyme.

B. second and third lines rhyme.

C. second and fourth lines rhyme.

D. third and fourth lines rhyme.

*Reporting Category/*Learning Standard for Item 19: ***Literature/*Learning Standard 14**

(20) Which word shows that something happened in the PAST?

A. ate

B. are

C. meet

D. will

*Reporting Category/*Learning Standard for Item 20: ***Language/*Learning Standard 5**

Session 2, Reading Selection #1

Read this selection to find out what happens to Alice when she follows the rabbit and falls down a hole in the ground. Use information from the selection to answer the questions that follow.

Down the Rabbit-hole

from *Alice in Wonderland*
by Lewis Carroll

1 Alice was getting very tired of sitting next to her sister on the bank, with nothing to do. She had looked at her sister's book, but it had no pictures in it. Alice did not see the point of a book without pictures.

2 Alice was beginning to wonder whether she should make a daisy-chain, when suddenly a White Rabbit with pink eyes ran close by her. There was nothing strange about that, and Alice was not even very surprised when she heard the Rabbit say to itself, "Oh dear! I shall be so late!" But when the Rabbit took a watch out of its waistcoat-pocket, Alice jumped to her feet and ran across the field after it. She was just in time to see it pop down a large rabbit-hole. Alice followed it never giving a thought as to how she would get out again.

3 The rabbit-hole went straight on like a tunnel. Suddenly, Alice found herself falling down what seemed to be a very large hole. Either the hole was very deep or she was falling very slowly, for she had plenty of time to look around her as she fell.

4 At first, she tried to look down but it was too dark to see anything. Then she looked at the sides, and noticed they were filled with cupboards and bookshelves. She took down a jar from one of the shelves as she passed. It was labelled "ORANGE MARMALADE" but it was empty. She put it into one of the cupboards as she fell past.

5 Down, down, down. Would the fall never come to an end? "I wonder how many miles I have fallen?" said Alice to herself. "I must be near the centre of the earth by now. I wonder if I shall fall right through the earth!"

6 Down, down, down. There was nothing else to do, so Alice started to talk again. "Dinah will miss me very much tonight." (Dinah was her cat.) "I hope they give her a saucer of milk at dinner-time." Alice started to get very sleepy. She felt that she was dozing off, and had just began to dream that she was walking hand in hand with Dinah, when suddenly, thump! Thump! Thump! Down she came upon a heap of dry sticks and leaves. The fall was over.

7 Alice was not hurt, she jumped to her feet and looked up to see how far she had actually fallen but it was too dark to see anything. In front of her was another long passage. The White Rabbit was hurrying down it. Quickly Alice followed. She heard the Rabbit say as it turned a corner, "Oh my ears and whiskers, how late it is getting!" Alice was close behind as she turned the corner, but the Rabbit had disappeared. She found herself in a long, low hall. There were doors all round the hall, but they were all locked and when Alice had been all the way down one side and up the other trying every door, she walked sadly down the middle wondering how she was ever going to get out again.

8 Suddenly she came across a three-legged table, made of glass. The only thing on the table was a tiny golden key.

"Down the Rabbit-hole" from ALICE IN WONDERLAND by Lewis Carroll. In the public domain.

Session 2, Multiple-Choice Questions

(21) At the beginning of this selection, Alice is in a

A. hall.

B. tunnel.

C. cupboard.

D. field.

*Reporting Category/*Learning Standard for Item 21: ***Literature/*Learning Standard 12**

(22) Alice PROBABLY followed the rabbit because it

A. could talk.

B. had pink eyes.

C. was late.

D. had a watch.

*Reporting Category/*Learning Standard for Item 22: ***Literature/*Learning Standard 12**

(23) In paragraphs 5 and 6, the author keeps repeating the word ***down*** in order to

A. make the story longer.

B. show Alice had a long fall.

C. make the lines rhyme.

D. keep the reader's interest.

*Reporting Category/*Learning Standard for Item 23: ***Literature/*Learning Standard 15**

(24) According to this selection, why did Alice think she was near "the centre of the earth"?

A. It was hot in the rabbit-hole.

B. All she could see was dirt.

C. She had fallen a long way.

D. The hole was filled with cupboards.

*Reporting Category/*Learning Standard for Item 24: ***Literature/*Learning Standard 12**

Read the sentence in the box below.

Alice was getting very tired of sitting next to her sister on the bank, with nothing to do.

(25) In the sentence above, the word ***bank*** is used as

A. a noun.

B. an adjective.

C. a verb.

D. an adverb.

*Reporting Category/*Learning Standard for Item 25: ***Language/*Learning Standard 5**

Use the dictionary entry to select the meaning of the word ***pop*** in the sentence below.

pop (pop) *v.* **1.** to make a sudden, explosive sound; **2.** to go or come suddenly; **3.** to shoot at something; **4.** to bulge from the socket.

(26) "She was just in time to see it ***pop*** down a large rabbit-hole."

A. definition 1

B. definition 2

C. definition 3

D. definition 4

*Reporting Category/*Learning Standard for Item 26: ***Language/*Learning Standard 4**

(27) This selection is an example of a

A. biography.

B. fantasy.

C. myth.

D. tall tale.

*Reporting Category/*Learning Standard for Item 27: ***Literature/*Learning Standard 10**

English Language Arts, Grade 4

Session 2, Open-Response Question

㉘ Describe what Alice saw, heard, and felt when she fell down the rabbit-hole. Use specific information from the selection to support your answer.

Reporting Category/Learning Standard for Item 28: **Literature/Learning Standard 12**

Session 3, Reading Selection #1

You have seen birds use their wings to fly. Do you know what else they use? Read the article below. Use information from the article to answer the questions that follow.

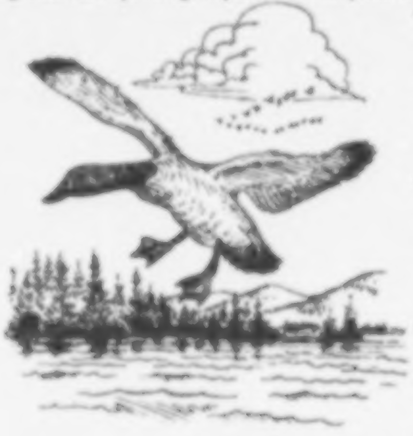
Feet for Flight

by Michael L. May

1 Birds fly with their wings, right? But did you know that many birds also use their feet to fly? Some birds need them for takeoffs and landings. Other birds use their feet to control flight speed or body temperature.

2 In order for the American coot to get off the ground, it must make a running start across the water. Other birds, such as the mallard duck, can jump right out of the water and into flight. But coots are too heavy and need to build up speed. Like an airplane rolling down the runway, a coot runs across the surface of the water until it reaches flight speed, then lifts off and flaps away.

3 Being airborne doesn't mean that the footwork is over. Some birds use their feet to slow down in flight. Now, it might seem that a bird could just stop flapping its wings and reduce speed. But it's not that simple. If you stop pedaling your bicycle when you're going downhill, you'll eventually slow down when you reach the bottom. But you still need brakes. Without brakes, flying birds and speeding bicycles can't stop fast enough.



4 One bird that uses its feet as air brakes is the graylag goose. When this bird comes in for a landing, it dangles its feet like small parachutes. The rushing air pushes against the broad, webbed feet and slows the goose down, allowing it to make a smooth landing in the water.

5 For some birds, even air brakes are not enough. Mute swans extend their webbed feet forward when landing. When their feet hit the water, the swans ski across the surface until they gradually slow and plop safely into the pond or lake.

6 Flying is a tough business that requires lots of energy. Because birds work hard when they fly, they get hot. And if they can't cool down, they overheat like a car on a hot summer day. During flight, hot blood flows

into their feet from the body. The wind cools the feet off, and the feet cool the blood before it returns to the bird's body, much as a radiator cools a car engine. Pigeons can release over half of their extra heat through their feet. Herring gulls rely on their feet to remove 80 percent of the heat generated by flight.

7 So bird flight is more than just feathers and wings. It's feet, too. Whether taking off or landing, reducing speed or body temperature, birds depend on their feet for flight.

© Michael L. May

Session 3, Multiple-Choice Questions

Read the question in the box below.

Birds fly with their wings, right?

(29) The author PROBABLY begins the article with the question in the box above

A. because he wants an answer.

B. because it is about birds.

C. to state the main idea.

D. to gain the reader's attention.

*Reporting Category/Learning Standard for Item 29: **Literature/Learning Standard 13***

(30) According to the article, bird feet can be used like

A. brakes.

B. car engines.

C. wings.

D. airport runways.

*Reporting Category/Learning Standard for Item 30: **Literature/Learning Standard 8***

(31) In paragraph 4, the author writes, "it dangles its feet like small parachutes." This is an example of a

A. synonym.

B. simile.

C. summary.

D. subject.

*Reporting Category/Learning Standard for Item 31: **Literature/Learning Standard 15***

㉜ According to the article, how are the American coot, the graylag goose, and the mute swan similar?

A. the way they take off

B. their weight and size

C. they use their feet for flight

D. the way they land in water

Reporting Category/Learning Standard for Item 32: ***Literature/Learning Standard 8***

㉝ The author compares a bird's feet during flight to a car's

A. bumper.

B. radiator.

C. trunk.

D. hood.

Reporting Category/Learning Standard for Item 33: ***Literature/Learning Standard 8***

㉞ The last sentence in the article is important because it

A. summarizes the main points of the article.

B. asks questions to be answered in the next selection.

C. gives new information about feathers and wings.

D. tells you what to do about bird's feathers.

Reporting Category/Learning Standard for Item 34: ***Literature/Learning Standard 13***

Read the sentence in the box below.

> Herring gulls rely on their feet to remove 80 percent of the heat generated by flight.

㉟ In the sentence in the box above, the word ***generated*** means

A. caused.

B. used.

C. stopped.

D. allowed.

Reporting Category/Learning Standard for Item 35: ***Language/Learning Standard 4***

Session 3, Open-Response Question

(36) Describe THREE ways that birds use their feet in flight. Use information from the article to support your answer.

Reporting Category/Learning Standard for Item 36: ***Literature*/Learning Standard 8**

Session 3, Reading Selection #2

Butterflies are beautiful flying creatures. Read this ancient story about when they first came to be. Use information from the story to answer the questions that follow.

How Butterflies Came to Be

by Michael J. Caduto and Joseph Bruchac

1 Long ago, when the world was very new, Elder Brother walked around Earth to enjoy the beauty of it. He watched the children playing. Everywhere on Earth, they were playing.

2 "How happy the children are!" thought Elder Brother. "They love the soft rain, the songs of birds, the colors of flowers, the green of the grass. They love the bright leaves that fall from the trees and fly through the breeze."

3 But as he watched, Elder Brother began to worry. "Someday these children may be sad," he thought. "They may get sick or be hungry. They may get cold in the snow, or be blown about by harsh winds."

4 Then Elder Brother had an idea that made him smile again. He got a big bag and filled it with flowers and red and yellow leaves. He put in some blue feathers of the jaybird, some blades of green grass, some golden corn. He added a bit of sunshine. At the very last minute, he added some bird songs. Then he closed the bag and shook it and shook it.

5 "Now come here and open this bag," called Elder Brother to the children. The children did so, and out flew thousands of tiny, wonderful, colorful creatures with wings. They were of the colors of all the things in the world, and each creature sang a song.

6 "What are they? What are they?" cried the children. They laughed and clapped with joy as the creatures flew about their heads.

7 "These are new creatures called *butterflies*," said Elder Brother. "I made them for you. If times come when you are sad, the sight of butterflies may cheer you up. On stormy days when cold winds blow, the memory of butterflies will warm your heart."

8 But the birds were not so happy as the children were.

9 "Elder Brother," complained the birds, "at the very beginning of the world, colors were given to all living things. But songs were given only to us birds. We don't think it's fair for these new things, the butterflies, to have our songs!"

10 Elder Brother thought about that for a while. Then he said, "Birds, you are right. From now on, the songs belong just to you."

11 So that is how it is to this very day. The butterflies dance and fly and make children happy. But they are silent.

"How Butterflies Came to Be" from *Keepers of the Animals: Native American Animal Stories and Wildlife Activities for Children* by Michael J. Caduto and Joseph Bruchac, Fulcrum Publishing, Inc. Copyright © 1991 by Michael J. Caduto and Joseph Bruchac. Adapted and reprinted by permission of the publisher.

Session 3, Multiple-Choice Questions

(37) According to the story, what did Elder Brother do that made the birds unhappy?

A. He made the butterflies prettier than the birds.

B. He made the children clap with joy.

C. He gave the butterflies the ability to sing.

D. He made butterflies for the children.

*Reporting Category/*Learning Standard for Item 37: ***Literature/*Learning Standard 8**

(38) In paragraph 9, the birds ***complained*** to Elder Brother because they were

A. tired.

B. sick.

C. hungry.

D. unhappy.

*Reporting Category/*Learning Standard for Item 38: **Language/Learning Standard 4**

Read the phrase in the box below.

> and out flew thousands of tiny, wonderful, colorful creatures with wings.

(39) In the phrase above, the commas are used to separate a series of

A. nouns.

B. verbs.

C. adverbs.

D. adjectives.

*Reporting Category/*Learning Standard for Item 39: **Language/Learning Standard 5**

(40) This selection is an example of stories that were written long ago to explain how things came to be on Earth. This type of story is

A. a poem.

B. a fable.

C. a myth.

D. an essay.

*Reporting Category/*Learning Standard for Item 40: ***Literature*/Learning Standard 10**

IV. English Language Arts, Grade 7

A. Composition
B. Language and Literature

English Language Arts, Grade 7

A. Composition

The spring 2002 Grade 7 MCAS English Language Arts Composition test was based on the learning standards of the Composition strand of the Massachusetts *English Language Arts Curriculum Framework* (2001).

Curriculum Framework *Learning Standards*

The learning standards for the Composition strand are listed below and are directly quoted from the *Framework;* applicable *Framework* page numbers are shown in parentheses.

Composition (*Framework*, pp. 72–83)

Learning Standard 19

Students will write with a clear focus, coherent organization, and sufficient detail.

Learning Standard 20

Students will write for different audiences and purposes.

Learning Standard 21

Students will demonstrate improvement in organization, content, paragraph development, level of detail, style, tone, and word choice (diction) in their compositions after revising them.

Learning Standard 22

Students will use knowledge of standard English conventions in their writing, revising, and editing.

MCAS Reporting Category

In *Test Item Analysis Reports* and on the *Subject Area Subscore* pages of the MCAS *School* and *District Reports,* ELA Composition test results are reported under the MCAS reporting category of Composition.

MCAS Spring 2002 Common Test Items
ELA Composition, Grade 7

Test Sessions

MCAS ELA Composition Student Test Booklets included 2 separate test sessions, administered on the same day with a short break between sessions. During the first session, each student wrote a first draft of a composition in response to the following writing prompt. During the second session, each student revised his/her first draft and submitted his/her second draft for scoring.

Reference Materials and Tools

At least one dictionary per classroom was provided for student use during ELA Composition test sessions. No other reference materials or tools were allowed during either ELA Composition test session.

Cross-Reference Information

The shaded bar following the writing prompt indicates this item's MCAS reporting category and which *Framework* learning standards it assesses.

Grade 7 Writing Prompt

WRITING PROMPT

Respect. Singers sing about it. Some people inspire it. Think about someone you respect and admire. The person can be someone you know, or someone you have read or heard about.

In a well-developed composition, describe the person you have selected. Explain in detail at least two reasons why you respect this person.

Reporting Category/Learning Standard for Writing Prompt: ***Composition*/Learning Standards 19-22**

Grade 7 Make-Up Writing Prompt

WRITING PROMPT

All of us face challenges in life. One challenge might be making new friends. Another challenge might be learning how to play a sport or a musical instrument.

In a well-developed composition, describe a challenge that you or someone you know has faced. What lesson did you learn?

Reporting Category/Learning Standard for Make-Up Writing Prompt: ***Composition*/Learning Standards 19-22**

English Language Arts, Grade 7

B. Language and Literature

The spring 2002 Grade 7 MCAS English Language Arts Language and Literature test was based on the learning standards of two content strands of the Massachusetts *English Language Arts Curriculum Framework* (2001):

- Language
- Literature

Curriculum Framework *Learning Standards*

The learning standards for the Language and Literature strands are listed below and are directly quoted from the *Framework*; applicable *Framework* page numbers are shown in parentheses.

Language (*Framework*, pp. 19–26)

Learning Standard 4

Students will understand and acquire new vocabulary and use it correctly in reading and writing.

Learning Standard 5

Students will analyze standard English grammar and usage and recognize how its vocabulary has developed and been influenced by other languages.

Learning Standard 6

Students will describe, analyze, and use appropriately formal and informal English.

Literature (Framework, pp. 35-64)

Learning Standard 8

Students will identify the basic facts and main ideas in a text and use them as the basis for interpretation.

Learning Standard 9

Students will deepen their understanding of a literary or non-literary work by relating it to its contemporary context or historical background.

Learning Standard 10

Students will identify, analyze, and apply knowledge of the characteristics of different genres.

Learning Standard 11

Students will identify, analyze, and apply knowledge of theme in a literary work and provide evidence from the text to support their understanding.

Learning Standard 12

Students will identify, analyze, and apply knowledge of the structure and elements of fiction and provide evidence from the text to support their understanding.

Learning Standard 13

Students will identify, analyze, and apply knowledge of the purpose, structure, and elements of nonfiction or informational materials and provide evidence from the text to support their understanding.

Learning Standard 14

Students will identify, analyze, and apply knowledge of the theme, structure, and elements of poetry and provide evidence from the text to support their understanding.

Learning Standard 15

Students will identify and analyze how an author's words appeal to the senses, create imagery, suggest mood, and set tone and provide evidence from the text to support their understanding.

Learning Standard 16

Students will identify, analyze, and apply knowledge of the themes, structure, and elements of myths, traditional narratives, and classical literature and provide evidence from the text to support their understanding.

Learning Standard 17

Students will identify, analyze, and apply knowledge of the themes, structure, and elements of drama and provide evidence from the text to support their understanding.

MCAS Reporting Categories

In *Test Item Analysis Reports* and on the *Subject Area Subscore* pages of the MCAS *School* and *District Reports,* ELA Language and Literature test results are reported under the following two MCAS reporting categories:

- Language
- Literature

MCAS Spring 2002 Common Test Items
ELA Language and Literature, Grade 7

Test Sessions

MCAS ELA Language and Literature Student Test Booklets included 3 separate test sessions. Each session included selected readings, followed by multiple-choice and open-response questions.

Reference Materials and Tools

No reference materials or tools were allowed during any ELA Language and Literature test session.

Cross-Reference Information

The shaded bar underneath each item indicates the item's MCAS reporting category and which *Framework* learning standard it assesses.

Session 1, Reading Selection #1

Many beautiful things last only a little while. But are they worth the time it takes to create them? Read the selection below. Use information from the selection to answer the questions that follow.

Sand Art, on Deadline

Talent Is a Divine Gift—Not to Be Squandered[1]

Anonymous

1 The young man arrived on the Massachusetts beach early carrying a portable radio, a shovel, and an odd assortment of tools. There were a bricklayer's trowel, a palette knife, spatulas, spoons, and a spray bottle.

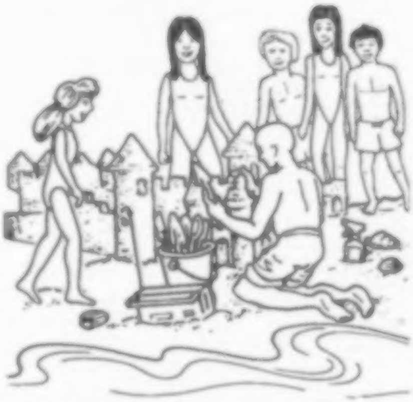
2 He walked down near the water—the tide was out—put down the radio and tuned it to soft rock. Then he shoveled wet sand into a pile nearly four feet high and as many feet across. He took up the trowel and used it to slice large hunks off the pile, creating a rectangular shape.

3 After that, he set to work with palette knife, spatulas, and spoons. He shaped a graceful tower, topped walls with crenelated[2] battlements, fashioned elegant bay windows, and carved out a massive front gate.

4 The man knew his sand. With deft[3] strokes, he smoothly finished some surfaces, embroidered baroque designs on others. As delicate shapes began to dry, he gently moistened them with water from the spray bottle, lest they crumble in the breeze.

5 All this took hours. People gathered, commenting to each other and asking questions of the sculptor. Lost in concentration, he gave only perfunctory[4] replies. At last he stood back, apparently satisfied with a castle worthy of the Austrian countryside or Disneyland.

6 Then he gathered his tools and radio and moved them up to drier sand. He had known for a while what many in the rapt crowd still overlooked; the tide was coming in. Not only had he practiced his craft with confidence and style, he had done so against a powerful, immutable deadline.



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[1] *squandered* — wasted
[2] *crenelated* — notched; indented
[3] *deft* — quick and expert
[4] *perfunctory* — showing little interest or care

7 As the spectators looked on, water began to lap at the base of the castle. In minutes it was surrounded, a miniature Mont-Saint-Michel.[5] Then the rising flood began to erode the base, chunks of wall fell, the tower tumbled, finally the gate's arch collapsed. More minutes passed, and small waves erased bay windows and battlements—soon no more than a modest lump was left.

8 Many in the crowd looked distraught; some voiced dismay. But the sculptor remained serene. He had, after all, had a wonderful day, making beauty out of nothing, and watching it return to nothing as time and tide moved on.

---

[5] *Mont-Saint-Michel* — a small island in northwestern France connected to the mainland by a road that is covered by water at high tide

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English Language Arts, Grade 7

Session 1, Multiple-Choice Questions

① In this selection, why does the sculptor start early in the day?

A. He knows the tide is out on this particular morning.
B. It gives time for the crowd to gather.
C. He needs the sun to help dry the sand.
D. It is easier to begin with only a few people around.

*Reporting Category/*Learning Standard for Item 1: ***Literature/*Learning Standard 13**

② The writer uses paragraphs 3 and 4 to describe the sculptor's

A. enthusiasm.
B. skill.
C. speed.
D. motivation.

*Reporting Category/*Learning Standard for Item 2: ***Literature/*Learning Standard 13**

③ Which statement **best** indicates that the sculptor was an expert?

A. He attracted a large crowd.
B. He had an ability to create elaborate details.
C. He was able to finish his work.
D. His satisfaction with the results showed on his face.

*Reporting Category/*Learning Standard for Item 3: ***Literature/*Learning Standard 13**

④ In this selection, what does the incoming tide signal?

A. It is time to begin working.
B. It is the busiest time of the day.
C. It is the end of a day's work.
D. It is time for the spectators to leave.

*Reporting Category/*Learning Standard for Item 4: ***Literature/*Learning Standard 13**

English Language Arts, Grade 7

⑤ How did the spectators react when the tide began to come in?

A. They tried to save the sand castle.
B. They were upset to see the art ruined.
C. They were nervous about their own belongings.
D. They helped the artist finish the castle.

*Reporting Category/*Learning Standard for Item 5: ***Literature/Learning Standard 8***

⑥ The reader can tell that the sculptor's reward for his work is

A. personal satisfaction.
B. attention from the crowd.
C. fame as an artist.
D. payment for his work.

*Reporting Category/*Learning Standard for Item 6: ***Literature/Learning Standard 8***

⑦ In paragraph 8, the word *serene* means

A. nervous.
B. alert.
C. drowsy.
D. calm.

*Reporting Category/*Learning Standard for Item 7: ***Language/Learning Standard 4***

Session 1, Open-Response Question

⑧ The artist does not feel that sand art is a waste of time. What evidence from the story indicates that the artist values his work? Use information from the story to support your answer.

*Reporting Category/*Learning Standard for Item 8: ***Literature/*****Learning Standard** 13

Session 1, Reading Selection #2

A thief can be outsmarted. "The House of Tiles" is a legend that tells how a robbery was prevented. Read the legend below. Use information from the legend to answer the questions that follow.

The House of Tiles

by Genevieve Barlow and William Stivers

1 One of the most beautiful buildings in Mexico City is called the House of Tiles. It is not far from the old cathedral of the capital. For many years, only the wealthy and noble people lived in this residence. In the twentieth century, the two Sanborn brothers bought the house. Here, they established a restaurant that serves Mexican as well as American food; it even serves malted milk and hamburgers. This is the legend of the origin of the House of Tiles.

2 In the eighteenth century, young don[1] Luis, the second Count of Orizaba, lived with his wealthy and distinguished family in Mexico City. Luis was not a good son. He was lazy and selfish. He amused himself by day and night and never thought of anything serious.

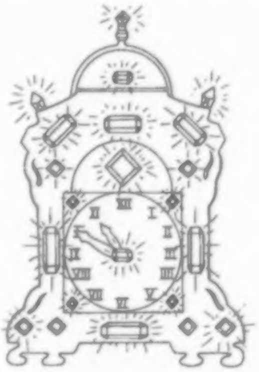
3 Luis' parents were very sad because of the bad conduct of their son. One day Luis' father said to lazy Luis, "You'll never be able to make a house of tiles."[2]

4 "I don't care. I only want to have a good time," Luis answered, and left quickly to attend a party.

5 During the following days, Luis thought a lot about what his father had said and he decided to change his behavior.

6 Instead of amusing himself all the time, he would work long hours with great enthusiasm. At the end of a few years, he had amassed a fortune.

7 He bought a large two-story house not far from the cathedral. He and his workmen covered the house with beautiful white, yellow, and blue tiles. When all this work was finished, Luis lived in this elegant house. Afterwards, he spent a lot of time in Europe where he bought elegant and costly furniture.



8 Now, Luis was ready to give a grand party in his magnificent house in honor of his parents. He invited all the wealthy and noble people of the capital.

9 During the party there were songs and dances. Shortly before midnight, Luis noticed that a very costly and ornate clock had disappeared from a table that was below some large windows.

10 Luis thought that there was a thief among the guests. No doubt, the person hid the clock underneath his or her clothes. For that reason, the young man went to the center of the great room and announced aloud, "Ladies and gentlemen, I regret having to interrupt the music, but I am very sad. A valuable clock is no longer on the table below the large windows."

11 "How strange!" many people said.

---

[1] A title used before the first name of a Spanish nobleman or gentleman; *doña* is the feminine equivalent.

[2] This saying means "You'll never amount to anything."

12 "This clock, mounted with diamonds, is a gift from the king of Spain," Luis continued. "Now it is ten minutes to twelve. Soon the clock will play music before striking twelve. The doors of the house are all locked. No one can leave. Now we are going to turn out the lights of this room for a few minutes. In the dark, the person who has the clock can put it back on the table."

13 After a few moments the servants entered with the lights. Every eye was turned toward the table. There was the clock! It was one minute to twelve.

14 The people impatiently watched the tiny hands of the clock reach twelve and pass it, but the clock didn't play any music, nor did it strike the hour.

15 Luis, seeing the looks of surprise and curiosity on the faces of the people, said, "The truth of the matter, my friends, is that the clock never plays any music nor strikes the hour. Now, we can go on with our party."

16 Thus ends the legend of Luis and the House of Tiles.

From "Legends of Mexico" by Barlow and Stivers. Used with permission from NTC/Contemporary Publishing Group.

Session 1, Multiple-Choice Questions

⑨ The author uses paragraph 1 to describe the

A. wonderful sites and stories found in Mexico City.

B. setting for the legend "The House of Tiles."

C. wealthy and noble people in Mexico City.

D. way Mexican and American foods are served.

*Reporting Category/*Learning Standard for Item 9: ***Literature/Learning Standard 12***

⑩ Based on this legend, Luis could **best** be described as

A. generous.

B. well-educated.

C. clever.

D. well-mannered.

*Reporting Category/*Learning Standard for Item 10: ***Literature/Learning Standard 12***

⑪ One literary device the writer uses in paragraphs 12, 13, and 14 is

A. foreshadowing.

B. flashback.

C. satire.

D. suspense.

*Reporting Category/*Learning Standard for Item 11: ***Literature/Learning Standard 12***

⑫ The reader can conclude all of the following **except** that

A. the thief was never identified.

B. the thief was in the room.

C. the thief regularly attended Luis' parties.

D. the thief had a surprised look on his face.

*Reporting Category/*Learning Standard for Item 12: ***Literature/Learning Standard 12***

⑬ In this phrase, "lived with his wealthy and distinguished family," what part of speech is the word *distinguished*?

A. noun

B. verb

C. adjective

D. adverb

*Reporting Category/*Learning Standard for Item 13: ***Language*/Learning Standard 5**

Session 1, Reading Selection #3

The poem "A Drowsy Day" describes impressions of a rainy day. Read the poem below. Use information from the poem to answer the questions that follow.

A Drowsy Day

The air is dark, the sky is gray,
The misty shadows come and go,
And here within my dusky room
Each chair looks ghostly in the gloom.
Outside the rain falls cold and slow—
Half-stinging drops, half-blinding spray.

Each slightest sound is magnified,
For drowsy quiet holds her reign;
The burnt stick in the fireplace breaks,
The nodding cat with start awakes,
And then to sleep drops off again,
Unheeding Towser[1] at her side.

I look far out across the lawn,
Where huddled stand the silly sheep;
My work lies idle at my hands,
My thoughts fly out like scattered strands
Of thread, and on the verge of sleep—
Still half awake—I dream and yawn.

What spirits rise before my eyes!
How various of kind and form!
Sweet memories of days long past,
The dreams of youth that could not last,
Each smiling calm, each raging storm,
That swept across my early skies.

Half seen, the bare, gaunt-fingered boughs
Before my window sweep and sway,
And chafe[2] in tortures of unrest.
My chin sinks down upon my breast;
I cannot work on such a day,
But only sit and dream and drowse.

—Paul Laurence Dunbar

[1] *Towser* — traditional name for a dog
[2] *chafe* — to feel irritated or impatient

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Session 1, Multiple-Choice Questions

⑭ In stanza 2, the speaker describes what he can

A. feel.

B. taste.

C. hear.

D. smell.

*Reporting Category/*Learning Standard for Item 14: ***Literature*/Learning Standard 14**

⑮ In line 26, "sweep and sway" is an example of

A. irony.

B. alliteration.

C. hyperbole.

D. symbolism.

*Reporting Category/*Learning Standard for Item 15: ***Literature*/Learning Standard 15**

⑯ Stanza 4 provides clues about the speaker's

A. cat.

B. friends.

C. age.

D. work.

*Reporting Category/*Learning Standard for Item 16: ***Literature*/Learning Standard 14**

⑰ The exclamation points at the end of lines 19 and 20 are meant to express the speaker's

A. grief.

B. anger.

C. curiosity.

D. amazement.

*Reporting Category/*Learning Standard for Item 17: ***Language*/Learning Standard 5**

⑱ Lines 23 and 24 let the reader know that during the speaker's youth, he

A. would daydream frequently.
B. experienced good and bad times.
C. played outside during storms.
D. was happy all of the time.

*Reporting Category/*Learning Standard for Item 18: ***Literature/*****Learning Standard 14**

Session 1, Open-Response Question

⑲ In the poem, how does the weather influence the speaker's mood? Use details from the poem to support your answer.

Reporting Category/Learning Standard for Item 19: ***Literature*/Learning Standard 14**

Session 2, Reading Selection #1

The characters in the excerpt you are about to read are Kate Keller, the mother; Captain Arthur Keller, the father; Helen Keller, the child; and a doctor. The Miracle Worker *is a play for television about Helen Keller, whose vision and hearing were lost following a childhood illness. This scene from Helen Keller's life takes place in 1882. Read the excerpt below. Use information from the excerpt to answer the questions that follow.*

THE MIRACLE WORKER

A PLAY FOR TELEVISION

by William Gibson

ACT ONE

[*It is night, and we are in a child's crib, looking up: what we see are the crib railings and three faces in lamplight, looking down. They have been through a long vigil, it shows in their tired eyes and disarranged clothing. One is a gentlewoman in her twenties with a kindly and forbearing face,* KATE KELLER; *the second is a dry elderly* DOCTOR, *stethoscope at neck, thermometer in fingers; the third is a dignified gentleman in his forties with chin whiskers,* CAPTAIN ARTHUR KELLER. *Their dress is that of 1880, and their voices are southern. The* KELLERS' *faces are drawn and worried, until the* DOCTOR *speaks.*]

DOCTOR

She'll live.

[KATE *closes her eyes.*]

You're lucky, Captain Keller. Tell you now, I thought she wouldn't.

KELLER [*heavily*]

Doctor. Don't spare us. Will she be all right?

DOCTOR

Has the constitution of a goat. Outlive us all. Especially if I don't get some sleep.

[*He removes his stethoscope, his face leaves the railing; we continue to hear him, but see* KELLER's *hand across the crib take and squeeze* KATE's.]

You run an editorial in that paper of yours, Captain Keller, wonders of modern medicine, we may not know what we're curing but we cure it. Well, call it acute congestion of the stomach and brain.

[KELLER *moves after the* DOCTOR, *we hear them off-camera; we see only* KATE's *tearfully happy face hovering over us, her hand adjusting the blanket.*]

KELLER

I'll see you to your buggy. I won't undertake to thank you, Doctor—

DOCTOR [*simultaneously*]

Main thing is the fever's gone. I've never seen a baby, more vitality, that's the truth. By morning she'll be knocking down your fences again.

KELLER

Anything that you recommend us to do, we'll do—

DOCTOR

Might put up stronger fencing. Just let her get well, she knows how to do it better than we do. Don't poke at Providence, rule I've always made it a practice to—

> [*But throughout, their voices have been dying out of focus, and the image of* KATE's *face has begun to swim. Music steals in; we hear the music without distortion, but light and sound otherwise are failing.* KATE's *serene face smiles down with love, blurring in a halo of light, then is a spot, then is gone. Darkness.*]

> [*Cut to* CAPTAIN KELLER *standing in his yard, inside the gate, lamp in hand, the lighted house behind him; we hear, but do not see the* DOCTOR.]

DOCTOR

You're a pair of lucky parents, Captain Keller.

KELLER [*with weight*]

Thank you.

> [*The* DOCTOR *clicks a giddy-yap, we hear the clop of hoofs and roll of wheels.* KELLER's *eyes follow the unseen buggy out of sight, then lift to the stars, thanking them too. Suddenly from the house behind him comes a knifing scream; music out.*]

> [*Cut to* KATE's *face again, not from the baby's eyes, but across the crib, and her look is terrible; she chokes down a second scream.* KELLER *hurries in to her, the lamp aloft.*]

KELLER

Katie!

KATE

Look.

> [*She makes a pass with her hand in the crib, at the unseen child's face.*]

KELLER
What, Katie? She's well, she needs only time to—

KATE
She can't see.

[*She takes the lamp from him, moves it before the child's face.*]

She can't *see!*

KELLER [*hoarsely*]
Helen.

KATE
Or hear. When I screamed she didn't blink. Not an eyelash—

KELLER
Helen. Helen!

KATE
She can't hear you.

KELLER
Helen!

[*His face has something like fury in it, crying the child's name;* KATE *almost fainting takes up the baby's hand, pressing it to her mouth to stop her own cry. We go close to her lips, kissing the baby's hand. Dissolve on lips and hand.*]

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Session 2, Multiple-Choice Questions

⑳ In the opening text, the playwright sets the mood by discussing the

A. baby's temperature.

B. faces of the characters.

C. doctor's voice.

D. ages of the characters.

*Reporting Category/*Learning Standard for Item 20: ***Literature/*Learning Standard 15**

㉑ Captain Keller's first words in the play express what feeling?

A. anxiety

B. relief

C. thankfulness

D. hostility

*Reporting Category/*Learning Standard for Item 21: ***Literature/*Learning Standard 12**

㉒ The doctor clearly believes that baby Helen is unusually

A. content.

B. smart.

C. strong.

D. lucky.

*Reporting Category/*Learning Standard for Item 22: ***Literature/*Learning Standard 8**

㉓ Mrs. Keller screams because she is

A. angry.

B. confused.

C. horrified.

D. injured.

*Reporting Category/*Learning Standard for Item 23: ***Literature/*Learning Standard 12**

(24) Throughout this excerpt, the doctor's words show him to be what kind of person?

A. conceited

B. confident

C. nervous

D. soft-spoken

*Reporting Category/*Learning Standard for Item 24: ***Literature*/Learning Standard 12**

(25) Which of the following sentences from this excerpt is used as a stage direction?

A. She'll live.

B. Kate closes her eyes.

C. You're lucky, Captain Keller.

D. Tell you now, I thought she wouldn't.

*Reporting Category/*Learning Standard for Item 25: ***Literature*/Learning Standard 10**

(26) What is the main idea of this excerpt?

A. Love is the best solution for all problems.

B. Miracles can happen.

C. Happiness can change to grief in an instant.

D. Medical opinion can usually be trusted.

*Reporting Category/*Learning Standard for Item 26: ***Literature*/Learning Standard 11**

Session 2, Open-Response Question

(27) Compare the reactions of the mother and the father when they realize Helen is deaf and blind. Use information from this excerpt to support your answer.

*Reporting Category/*Learning Standard for Item 27: ***Literature*/Learning Standard 12**

Session 3, Reading Selection #1

This excerpt from "Can Bears Predict Earthquakes?" presents evidence that scientists have found to explain how animals seem to predict earthquakes. Read the excerpt below. Use information from the excerpt to answer the questions that follow.

Can Bears Predict Earthquakes?

by Russell Freedman

Students read a selection titled "Can Bears Predict Earthquakes?" and then answered questions 27 through 34 that follow on the next pages of this document.

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Session 3, Multiple-Choice Questions

(28) This excerpt is **best** described as *nonfiction* rather than fiction because it

A. tells about extraordinary events.

B. tells a story about animals.

C. includes surprising descriptions.

D. provides mostly factual information.

*Reporting Category/*Learning Standard for Item 28: ***Literature/*****Learning Standard 10**

(29) The **main** purpose of the first three paragraphs of this excerpt is to provide examples of

A. how earthquakes destroy the environment.

B. unusual animal behavior before earthquakes.

C. different ways animals adapt to earthquakes.

D. how earthquakes affect magnetic fields.

*Reporting Category/*Learning Standard for Item 29: ***Literature/*****Learning Standard 13**

(30) According to the excerpt, which animals may sense earthquakes because they can hear low-frequency sounds coming from earth?

A. fish

B. honeybees

C. birds

D. bears

*Reporting Category/*Learning Standard for Item 30: ***Literature/*****Learning Standard 8**

(31) In paragraph 12, what is the **main** purpose of the two questions?

A. to demonstrate that the author can answer them in the last paragraph

B. to summarize the information in the preceding paragraphs

C. to give the reader more information about the animals

D. to show that there is much left to learn about the subject

*Reporting Category/*Learning Standard for Item 31: ***Literature/*****Learning Standard 13**

㉜ In paragraph 5, the author writes, "we know little about the ability of animals to detect such changes." What does *detect* mean?

A. predict

B. react to

C. sense

D. understand

Reporting Category/Learning Standard for Item 32: ***Language*/Learning Standard 4**

㉝ If you wanted to find the origin of the word *investigate*, which source would be the **best** to use?

A. an almanac

B. an encyclopedia

C. a dictionary

D. a thesaurus

Reporting Category/Learning Standard for Item 33: ***Language*/Learning Standard 5**

Session 3, Open-Response Question

(34) What convincing evidence have scientists found to support the possibility that animals can predict earthquakes? Use information from the excerpt to support your answer.

Reporting Category/Learning Standard for Item 34: *Literature*/Learning Standard 13

Session 3, Reading Selection #2

This selection is an excerpt from the Anglo-Saxon epic poem Beowulf. *The poem describes the battles of the heroic Scandinavian prince Beowulf against the monster Grendel, who has been terrorizing King Hrothgar's banquet hall for twelve years. This excerpt describes the arrival of the monster at the banquet hall. Read the excerpt and answer the questions that follow.*

from Beowulf

1 Out in the black fen something stirred. It was cruel and slimy and its eyes shone green. A part of the night it moved through, its wicked heart was darker than the darkest place in that night. . . .

[Back in the castle]

2 Queen Wealhtheow paced the corridors, wringing her white hands until the knucklebones nearly pierced the delicate flesh. Unferth, drunk, his buckle-belt undone, leaned from a turret to scan the murky marsh. Hrothgar and his lords waited in the banqueting hall below. Food was set out, steaming on the tables; but nobody felt like eating it.

• • •

3 The coming of Grendel was neither swift nor slow. This time, the night so thick, it was impossible to tell the precise moment when the creature emerged from his dreggy pool and began to drag his coils toward hall Heorot. There was only the sound to go by—the foul breath squeaking in little gasps, the noise in his throat like the splintery crunching of bones. The rats could not see him and ran over his scales in the dark. Grendel let them go. He was hungry for more than rats.

4 The door of the banqueting hall was thick and studded. Stout bars held it shut against the night's alarms. None of the ten waiting warriors had slept a wink. Hrothgar's eyes never left the door. He sat bolt upright, sword in hand, a broad axe at his side. The others were in similar attitudes.

5 But they had no chance against the fury of the beast.

6 One moment the door was standing . . .

7 The next, it was down, smashed by a single blow, and Grendel was upon them!

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Session 3, Multiple-Choice Questions

35. What does paragraph 2 show about the people in the castle?

A. They were unprepared.

B. They were nervous.

C. They were hungry.

D. They were patient.

Reporting Category/Learning Standard for Item 35: ***Literature/Learning*** **Standard 12**

36. In paragraph 3, which word **best** describes Grendel's attitude as he heads toward the castle?

A. determined

B. cautious

C. casual

D. weary

Reporting Category/Learning Standard for Item 36: ***Literature/Learning*** **Standard 15**

37. What was the **main** thing Hrothgar and his men were counting on to keep Grendel out of the hall?

A. the bars on the door to the hall

B. the blackness of the night

C. the guard in the turret

D. the weapons inside the hall

Reporting Category/Learning Standard for Item 37: ***Literature/Learning*** **Standard 8**

38. Although the author never directly describes what happened after Grendel got into the hall, the tone of the last three paragraphs suggests that

A. Grendel was soundly defeated by Hrothgar.

B. Grendel's strength overcame Hrothgar and his men.

C. Grendel fled when he saw the men's swords.

D. Grendel was surprised to see the men in the hall.

Reporting Category/Learning Standard for Item 38: ***Literature/Learning*** **Standard 12**

㊴ In paragraph 3, the author writes "the noise in his throat like the splintery crunching of bones." What kind of figurative language is he using?

A. alliteration

B. exaggeration

C. simile

D. metaphor

Reporting Category/Learning Standard for Item 39: ***Literature/Learning Standard 15***

㊵ In paragraph 4, the author writes, "Stout bars held it shut against the night's alarms." What does *stout* mean?

A. long

B. iron

C. wooden

D. strong

Reporting Category/Learning Standard for Item 40: ***Language/Learning Standard 4***

V. English Language Arts, Grade 10

A. Composition
B. Language and Literature

English Language Arts, Grade 10
A. Composition

The spring 2002 Grade 10 MCAS English Language Arts Composition test was based on the learning standards of the Composition strand of the Massachusetts *English Language Arts Curriculum Framework* (2001).

Curriculum Framework *Learning Standards*

The learning standards for the Composition strand are listed below and are directly quoted from the *Framework*; applicable *Framework* page numbers are shown in parentheses.

Composition (*Framework*, pp. 72–83)

Learning Standard 19

Students will write with a clear focus, coherent organization, and sufficient detail.

Learning Standard 20

Students will write for different audiences and purposes.

Learning Standard 21

Students will demonstrate improvement in organization, content, paragraph development, level of detail, style, tone, and word choice (diction) in their compositions after revising them.

Learning Standard 22

Students will use knowledge of standard English conventions in their writing, revising, and editing.

MCAS Reporting Category

In *Test Item Analysis Reports* and on the *Subject Area Subscore* pages of the MCAS *School* and *District Reports*, ELA Composition test results are reported under the MCAS reporting category of Composition.

MCAS Spring 2002 Common Test Items
ELA Composition, Grade 10
Standard Test and Retest

Test Sessions

MCAS ELA Composition Student Test Booklets included 2 separate test sessions, administered on the same day with a short break between sessions. During the first session, each student wrote a first draft of a composition in response to the writing prompt on the next page. During the second session, each student revised his/her first draft and submitted his/her second draft for scoring.

Reference Materials and Tools

At least one dictionary per classroom was provided for student use during ELA Composition test sessions. No other reference materials or tools were allowed during either ELA Composition test session.

Cross-Reference Information

The shaded bar following the writing prompt indicates this item's MCAS reporting category and which *Framework* learning standards it assesses.

Grade 10 Writing Prompt

WRITING PROMPT

In literature as in life, people struggle with principles or beliefs they hold.

From a work of literature you have read in or out of school, select a character who struggles with his or her own principles or beliefs. In a well-developed composition, identify that character and explain how that character's inner struggle is important to the work of literature.

Reporting Category/Learning Standard for Writing Prompt: ***Composition*/Learning Standards 19-22**

Grade 10 Retest and Make-Up Writing Prompt

WRITING ASSIGNMENT

In literature as in life, friendship is important.

From a work of literature you have read in or out of school, select a friendship between two or more characters. In a well-developed composition, identify a friendship between two or more characters and explain why it is important to the work of literature.

Reporting Category/Learning Standard for Retest and Make-Up Writing Prompt: ***Composition*/Learning Standards 19-22**

English Language Arts, Grade 10
B. Language and Literature

The spring 2002 Grade 10 MCAS English Language Arts Language and Literature test was based on the learning standards of two content strands of the Massachusetts *English Language Arts Curriculum Framework* (2001):

- Language
- Literature

Curriculum Framework *Learning Standards*

The learning standards for the Language and Literature strands are listed below and are directly quoted from the *Framework;* applicable *Framework* page numbers are shown in parentheses.

Language (*Framework*, pp. 19–26)

Learning Standard 4

Students will understand and acquire new vocabulary and use it correctly in reading and writing.

Learning Standard 5

Students will analyze standard English grammar and usage and recognize how its vocabulary has developed and been influenced by other languages.

Learning Standard 6

Students will describe, analyze, and use appropriately formal and informal English.

Literature (*Framework*, pp. 35–64)

Learning Standard 8

Students will identify the basic facts and main ideas in a text and use them as the basis for interpretation.

Learning Standard 9

Students will deepen their understanding of a literary or non-literary work by relating it to its contemporary context or historical background.

Learning Standard 10

Students will identify, analyze, and apply knowledge of the characteristics of different genres.

Learning Standard 11

Students will identify, analyze, and apply knowledge of theme in a literary work and provide evidence from the text to support their understanding.

Learning Standard 12

Students will identify, analyze, and apply knowledge of the structure and elements of fiction and provide evidence from the text to support their understanding.

Learning Standard 13

Students will identify, analyze, and apply knowledge of the purpose, structure, and elements of nonfiction or informational materials and provide evidence from the text to support their understanding.

Learning Standard 14

Students will identify, analyze, and apply knowledge of the theme, structure, and elements of poetry and provide evidence from the text to support their understanding.

Learning Standard 15

Students will identify and analyze how an author's words appeal to the senses, create imagery, suggest mood, and set tone and provide evidence from the text to support their understanding.

Learning Standard 16

Students will identify, analyze, and apply knowledge of the themes, structure, and elements of myths, traditional narratives, and classical literature and provide evidence from the text to support their understanding.

Learning Standard 17

Students will identify, analyze, and apply knowledge of the themes, structure, and elements of drama and provide evidence from the text to support their understanding.

MCAS Reporting Categories

In *Test Item Analysis Reports* and on the *Subject Area Subscore* pages of the MCAS *School* and *District Reports*, ELA Language and Literature test results are reported under the following two MCAS reporting categories:

- Language
- Literature

MCAS Spring 2002 Common Test Items
ELA Language and Literature, Grade 10
Standard Test and Retest

Test Sessions

MCAS ELA Language and Literature Student Test Booklets included 3 separate test sessions. Each session included selected readings, followed by multiple-choice and open-response questions.

Reference Materials and Tools

No reference materials or tools were allowed during any ELA Language and Literature test session.

Cross-Reference Information

The shaded bar underneath each item indicates the item's MCAS reporting category and which *Framework* learning standard it assesses.

Session 1, Reading Selection #1

Jesús Colón discusses a job that he thought would be a wonderful opportunity for him. Read the story below. Use information from the story to answer the questions that follow.

Easy Job, Good Wages

by Jesús Colón

1 This happened early in 1919. We were both out of work, my brother and I. He got up earlier to look for a job. When I woke up, he was already gone. So I dressed, went out and bought a copy of the *New York World* and turned its pages until I got to the "Help Wanted Unskilled" section of the paper. After much reading and re-reading the same columns, my attention was held by a small advertisement. It read: "Easy job. Good wages. No experience necessary." This was followed by a number and street on the west side of lower Manhattan. It sounded like the job I was looking for. Easy job. Good wages. Those four words revolved in my brain as I was travelling toward the address indicated in the advertisement. Easy job. Good wages. Easy job. Good wages. Easy . . .

2 The place consisted of a small front office and a large loft on the floor of which I noticed a series of large galvanized tubs half filled with water out of which I noticed protruding the necks of many bottles of various sizes and shapes. Around these tubs there were a number of workers, male and female, sitting on small wooden benches. All had their hands in the water of the tub, the left hand holding a bottle and with the thumb nail of the right hand scratching the labels.

3 The foreman found a vacant stool for me around one of the tubs of water. I asked why a penknife or a small safety razor could not be used instead of the thumb nail to take off the old labels from the bottles. I was expertly informed that knives or razors would scratch the glass thus depreciating the value of the bottles when they were to be sold.

4 I sat down and started to use my thumb nail on one bottle. The water had somewhat softened the transparent mucilage used to attach the label to the bottle. But the softening did not work out uniformly somehow. There were always pieces of label that for some obscure reason remained affixed to the bottles. It was on those pieces of labels tenaciously fastened to the bottles that my right hand thumb nail had to work overtime. As the minutes passed I noticed that the coldness of the water started to pass from my hand to my body giving me intermittent body shivers that I tried to conceal with the greatest of effort from those sitting beside me. My hands became deadly clean and tiny little wrinkles started to show especially at the tip of my fingers. Sometimes I stopped a few seconds from scratching the bottles, to open and close my fists in rapid movements in order to bring blood to my hands. But almost as soon as I placed them in the water they became deathly pale again.

5 But these were minor details compared with what was happening to the thumb of my right hand. From a delicate, boyish thumb, it was growing by the minute into a full blown tomato colored finger. It was the only part of my right hand remaining blood red. I started to look at the workers' thumbs. I noticed that these particular fingers on their right hands were unusually

developed with a thick layer of corn-like surface at the top of their right thumb. The nails on their thumbs looked coarser and smaller than on the other fingers—thumb and nail having become one and the same thing—a primitive unnatural human instrument especially developed to detach hard pieces of labels from wet bottles immersed in galvanized tubs.

6 After a couple of hours I had a feeling that my thumb nail was going to leave my finger and jump into the cold water in the tub. A numb pain imperceptibly began to be felt coming from my right thumb. Then I began to feel such pain as if coming from a finger bigger than all of my body.

7 After three hours of this I decided to quit fast. I told the foreman so, showing him my swollen finger. He figured I had earned 69 cents at 23 cents an hour.

8 Early in the evening I met my brother in our furnished room. We started to exchange experiences of our job hunting for the day. "You know what?" my brother started, "early in the morning I went to work where they take labels off old bottles—with your right hand thumb nail . . . Somewhere on the West Side of Lower Manhattan. I only stayed a couple of hours. 'Easy job . . . Good wages' . . . they said. The person who wrote that ad must have had a great sense of humor." And we both had a hearty laugh that evening when I told my brother that I also went to work at that same place later in the day.

9 Now when I see ads reading, "Easy job. Good wages," I just smile an ancient, tired, knowing smile.

Permission of International Publishing Co., New York.

Session 1, Multiple-Choice Questions

① Turning pages until he gets to the "Help Wanted Unskilled" section suggests the narrator

A. has few job qualifications.

B. is a high school dropout.

C. was fired from his last job.

D. is not interested in working.

Reporting Category/Learning Standard for Item 1: ***Literature/Learning Standard 13***

② In paragraph 1, the narrator's repetition of "Easy job. Good wages." emphasizes that he was

A. aware of what was about to happen to him.

B. daydreaming about his job experience.

C. convinced he had found the perfect job.

D. trying to persuade himself to go to work.

Reporting Category/Learning Standard for Item 2: ***Literature/Learning Standard 13***

③ The workers could not use a penknife or a safety razor to scrape the bottles because

A. the foreman was concerned about the workers' well-being.

B. it would slow down the process of scraping labels.

C. the surface of the bottles could be damaged.

D. it would prevent the labels from coming off in one piece.

Reporting Category/Learning Standard for Item 3: ***Literature/Learning Standard 9***

④ In paragraph 5, when the narrator notices the other workers' thumbs, he

A. asks for an increase in wages.

B. realizes the true cost of the job.

C. requests a penknife for peeling the labels.

D. complains to the foreman about working conditions.

Reporting Category/Learning Standard for Item 4: ***Literature*/Learning Standard 13**

⑤ In paragraph 6, "my thumb nail was going to leave my finger and jump into the cold water in the tub" is an example of

A. onomatopoeia.

B. flashback.

C. allusion.

D. personification.

Reporting Category/Learning Standard for Item 5: ***Literature*/Learning Standard 13**

⑥ In the last sentence, what does the narrator mean when he states, "I just smile an ancient, tired, knowing smile"?

A. His smile is like his grandfather's.

B. He is happy about his brother's job.

C. He knows he will find better work.

D. He has learned an age-old truth.

Reporting Category/Learning Standard for Item 6: ***Literature*/Learning Standard 13**

English Language Arts, Grade 10

⑦ In paragraph 4, the word *tenaciously* **most nearly** means

A. stubbornly.

B. invisibly.

C. quickly.

D. sloppily.

*Reporting Category/*Learning Standard for Item 7: ***Language/*****Learning Standard 4**

Read the sentence in the box below.

> The foreman found a vacant stool for
> me around one of the tubs of water.

⑧ In the sentence above, the word *around* is used as a

A. noun.

B. verb.

C. preposition.

D. conjunction.

*Reporting Category/*Learning Standard for Item 8: ***Language/*****Learning Standard 5**

English Language Arts, Grade 10

Session 1, Open-Response Question

⑨ How does the meaning of the expression, "Easy job. Good wages," change for the author from the beginning of the story to the end? Use information from the story to support your answer.

Reporting Category/Learning Standard for Item 9: ***Literature*/Learning Standard 13**

Session 1, Reading Selection #2

Mary Ann Evans, better known by her pen name George Eliot, tells readers how to decide whether or not a day is well spent. Read the poem below. Use information from the poem to answer the questions that follow.

Count That Day Lost

If you sit down at set of sun
And count the acts that you have done,
And, counting, find
One self-denying deed, one word
That eased the heart of him who heard,
One glance most kind
That fell like sunshine where it went—
Then you may count that day well spent.

But if, through all the livelong day,
You've cheered no heart, by yea or nay—
If, through it all
You've nothing done that you can trace
That brought the sunshine to one face—
No act most small
That helped some soul and nothing cost—
Then count that day as worse than lost.

—George Eliot

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Session 1, Multiple-Choice Questions

⑩ According to the poem, a "day well spent" is one in which a person shows

A. courage.

B. compassion.

C. persistence.

D. selfishness.

*Reporting Category/*Learning Standard for Item 10: ***Literature*/Learning Standard 14**

⑪ In the last line, the phrase "worse than lost" implies that

A. few things are worse than feeling lost.

B. some people are incapable of kind acts.

C. a missed opportunity will never come again.

D. nothing of value can be gained from the past.

*Reporting Category/*Learning Standard for Item 11: ***Literature*/Learning Standard 14**

⑫ A **main** idea expressed in the poem is that

A. sunny days can inspire acts of generosity.

B. people sometimes lash out at the ones they love.

C. morning is the perfect time for reflection.

D. small acts may have a positive effect on others.

*Reporting Category/*Learning Standard for Item 12: ***Literature*/Learning Standard 14**

⑬ According to this dictionary entry, which definition **best** fits the word *trace* as it is used in line 12 of the poem?

trace (tras) *v.* **1.** to painstakingly form letters or figures. **2.** to copy by following an outline seen through a transparent superimposed sheet. **3.** to follow footprints of. **4.** to discover by going back over information step by step.

A. definition 1

B. definition 2

C. definition 3

D. definition 4

*Reporting Category/*Learning Standard for Item 13: ***Language/*****Learning Standard 4**

Session 1, Reading Selection #3

The following selection is from William Shakespeare's play As You Like It. *Read the selection below. Use information from the selection to answer the questions that follow.*

The Seven Ages of Man

from ***As You Like It***
by William Shakespeare

Jacques: All the world's a stage,
And all the men and women merely players;
They have their exits and their entrances,
And one man in his time plays many parts,
His acts being seven ages. At first, the infant,
Mewling and puking in the nurse's arms.
Then the whining schoolboy, with his satchel
And shining morning face, creeping like snail
Unwillingly to school. And then the lover,
Sighing like furnace, with a woeful ballad
Made to his mistress' eyebrow. Then a soldier,
Full of strange oaths and bearded like the pard[1],
Jealous in honour, sudden and quick in quarrel,
Seeking the bubble[2] reputation
Even in the cannon's mouth. And then the justice,
In fair round belly with good capon[3] lined,
With eyes severe and beard of formal cut,
Full of wise saws and modern instances[4];
And so he plays his part. The sixth age shifts
Into the lean and slippered pantaloon[5]
With spectacles on nose and pouch on side;
His youthful hose, well saved, a world too wide
For his shrunk shank, and his big manly voice,
Turning again toward childish treble, pipes
And whistles in his sound. Last scene of all,
That ends this strange eventful history,
Is second childishness and mere oblivion,
Sans[6] teeth, sans eyes, sans taste, sans everything.

---

[1] *pard* — leopard or large cat
[2] *bubble* — short-lived
[3] *capon* — a young, fattened chicken
[4] *instances* — examples to prove a point
[5] *pantaloon* — foolish old man in Italian comedy
[6] *sans* — without

"The Seven Ages of Man" from AS YOU LIKE IT by William Shakespeare. In the public domain.

Session 1, Multiple-Choice Questions

⑭ In line 3, what do the words "exits" and "entrances" represent in this selection?

A. sorrow and love

B. illness and health

C. death and birth

D. misfortune and happiness

*Reporting Category/*Learning Standard for Item 14: ***Literature/*****Learning Standard 12**

⑮ How does Shakespeare characterize a soldier in lines 11–15?

A. A soldier is short-tempered and eager for fame.

B. A soldier is loving and faithful to his mistress.

C. A soldier is honorable and loyal to the throne.

D. A soldier is jealous and cowardly in battle.

*Reporting Category/*Learning Standard for Item 15: ***Literature/*****Learning Standard 12**

⑯ In lines 23–25, what does Shakespeare **most likely** mean by "his big manly voice, / Turning again toward childish treble, pipes / And whistles in his sound"?

A. The aging man plays many musical instruments.

B. The aging man's voice changes from deep to high.

C. The aging man snores loudly in his sleep.

D. The aging man sings playful songs to his grandchildren.

*Reporting Category/*Learning Standard for Item 16: ***Literature/*****Learning Standard 15**

⑰ In line 27, the word *oblivion* **most likely** means

A. liveliness.

B. courage.

C. nothingness.

D. misery.

*Reporting Category/*Learning Standard for Item 17: ***Language/*****Learning Standard 4**

Session 1, Open-Response Question

All the world's a stage,
And all the men and women merely players;
They have their exits and their entrances,
And one man in his time plays many parts,
His acts being seven ages.

⑱ Explain what Shakespeare means by the lines above. Use evidence from each of the ages to support your answer.

Reporting Category/Learning Standard for Item 18: ***Literature*/Learning Standard 12**

Session 2, Reading Selection #1

The following excerpt is from the first chapter of In Cold Blood *by Truman Capote. As you read the excerpt, pay attention to how the author creates the setting for his story. When you have finished reading, answer the questions that follow.*

In Cold Blood

by Truman Capote

1 The village of Holcomb stands on the high wheat plains of western Kansas, a lonesome area that other Kansans call "out there." Some seventy miles east of the Colorado border, the countryside, with its hard blue skies and desert-clean air, has an atmosphere that is rather more Far West than Middle West. The local accent is barbed with a prairie twang, a ranch-hand nasalness, and the men, many of them, wear narrow frontier trousers, Stetsons, and high-heeled boots with pointed toes. The land is flat, and the views are awesomely extensive; horses, herds of cattle, a white cluster of grain elevators rising as gracefully as Greek temples are visible long before a traveler reaches them.

2 Holcomb, too, can be seen from great distances. Not that there is much to see—simply an aimless congregation of buildings divided in the center by the main-line tracks of the Santa Fe Railroad, a haphazard hamlet bounded on the south by a brown stretch of the Arkansas (pronounced "Ar-kan-sas") River, on the north by a highway, Route 50, and on the east and west by prairie lands and wheat fields. After rain, or when snowfalls thaw, the streets unnamed, unshaded, unpaved, turn from the thickest dust into the direst mud. At one end of the town stands a stark old stucco structure, the roof of which supports an electric sign—Dance—but the dancing has ceased and the advertisement has been dark for several years. Nearby is another building with an irrelevant sign, this one in flaking gold on a dirty window—HOLCOMB BANK. The bank closed in 1933, and its former counting rooms have been converted into apartments. It is one of the town's two "apartment houses," the second being a ramshackle mansion known, because a good part of the local school's faculty lives there, as the Teacherage. But the majority of Holcomb's homes are one-story frame affairs, with front porches.

3 Down by the depot, the postmistress, a gaunt woman who wears a rawhide jacket and denims and cowboy boots, presides over a falling-apart post office. The depot itself, with its peeling sulphur-colored paint, is equally melancholy; the Chief, the Super Chief, the El Capitan go by every day, but these celebrated expresses never pause there. No passenger trains do—only an occasional freight. Up on the highway, there are two filling stations, one of which doubles as a meagerly supplied grocery store, while the other does extra duty as a café—Hartman's Café, where Mrs. Hartman, the proprietress, dispenses sandwiches, coffee, soft drinks, and 3.2 beer. (Holcomb, like all the rest of Kansas, is "dry.")

4 And that, really, is all. Unless you include, as one must, the Holcomb School, a good-looking establishment, which reveals a circumstance that the appearance of the community otherwise camouflages: that the parents who send their children to this modern and ably staffed "consolidated" school—the grades go from kindergarten through senior high, and a fleet of buses transport the students, of which there are usually around three hundred and sixty, from as far as sixteen miles away—are, in general, a prosperous people. Farm ranchers, most of them, they are outdoor folk of very varied stock—German, Irish, Norwegian, Mexican, Japanese. They raise cattle and sheep, grow wheat, milo, grass seed, and sugar beets. Farming is always a chancy business, but in western Kansas its practitioners consider themselves "born gamblers," for they must contend with an extremely shallow precipitation (the annual average is eighteen inches) and anguishing irrigation problems. However, the last seven years have been years of droughtless beneficence. The farm ranchers in Finney County, of which Holcomb is a part, have done well; money has been made not from farming alone but also from exploitation of plentiful natural-gas resources, and its acquisition is reflected in the new school, the comfortable interiors of the farmhouses, the steep and swollen grain elevators.

5 Until one morning in mid-November of 1959, few Americans—in fact, few Kansans—had ever heard of Holcomb. Like the waters of the river, like the motorists on the highway, and like the yellow trains streaking down the Santa Fe tracks, drama, in the shape of exceptional happenings, had never stopped there. The inhabitants of the village, numbering two hundred and seventy, were satisfied that this should be so, quite content to exist inside ordinary life—to work, to hunt, to watch television, to attend school socials, choir practice, meetings of the 4-H club.

Permission granted by Alan U. Schwartz, Trustee of the Truman Capote Literary Trust.

Session 2, Multiple-Choice Questions

19 The author creates a rich setting for his story through the repeated use of

A. detailed description.

B. conflict.

C. analogies.

D. classical allusions.

*Reporting Category/*Learning Standard for Item 19: ***Literature/*Learning Standard 15**

20 Which is a statement of fact?

A. The village of Holcomb is located seventy miles east of the Colorado border.

B. The atmosphere of Holcomb is different from that of other midwest towns.

C. The people of Holcomb are usually very lonely.

D. The views from Holcomb are the best in the Midwest.

*Reporting Category/*Learning Standard for Item 20: ***Literature/*Learning Standard 8**

21 The phrase, "a white cluster of grain elevators rising as gracefully as Greek temples," contains an example of

A. irony.

B. allegory.

C. simile.

D. hyperbole.

*Reporting Category/*Learning Standard for Item 21: ***Literature/*Learning Standard 15**

22 According to the excerpt, the Holcomb bank

A. is located in a small building.

B. has moved into a new building.

C. is the center of commerce in town.

D. has been turned into apartments.

*Reporting Category/*Learning Standard for Item 22: ***Literature/*Learning Standard 8**

㉓ According to information in paragraph 4, what does the Holcomb School reveal about the community?

A. A melancholy feeling hangs over the town.

B. Holcomb is a prosperous community.

C. Most businesses left town long ago.

D. There is a very large school-age population.

*Reporting Category/*Learning Standard for Item 23: ***Literature/*Learning Standard 8**

㉔ Why do western Kansas farmers call themselves "born gamblers"?

A. Gambling money helped to build Holcomb.

B. They were "betting" on the success of their children.

C. The town was a gambling center for Kansas.

D. Farmers "take chances" on the weather every year.

*Reporting Category/*Learning Standard for Item 24: ***Literature/*Learning Standard 13**

㉕ In paragraph 5, the sentence, "Until one morning in mid-November of 1959, few Americans—in fact, few Kansans—had ever heard of Holcomb," contains an example of

A. oxymoron.

B. imagery.

C. foreshadowing.

D. understatement.

*Reporting Category/*Learning Standard for Item 25: ***Literature/*Learning Standard 15**

Session 2, Open-Response Question

㉖ According to the author, there is a difference between the appearance of Holcomb and its inhabitants, and the reality of Holcomb and its inhabitants. Using specific evidence from this excerpt, contrast how Holcomb and its inhabitants appear with how Holcomb and its inhabitants really are.

Reporting Category/Learning Standard for Item 26: ***Literature/Learning Standard 13***

Session 3, Reading Selection #1

In his interview with James Cameron, film critic Roger Ebert talks with the producer of Titanic *about the filming of the movie. Read the interview below. Use information from the interview to answer the questions that follow.*

Interview with James Cameron

by Roger Ebert
from *Roger Ebert's Movie Yearbook 1999*

Students read a selection titled "Interview with James Cameron" and then answered questions 27 through 34 that follow on the next pages of this document.

Due to copyright restrictions the passage cannot be released to the public in this document. For more information, see the copyright citation below.

Roger Ebert's Movie Yearbook 1999 © 1996, 1997, 1998 by Roger Ebert. Reprinted with permission of Andrew McMeel Publishing. All rights reserved.

Session 3, Multiple-Choice Questions

27. The purpose of the first two paragraphs is to

A. describe Ebert's reaction to a special effect.

B. show what the passengers did on the *Titanic*.

C. introduce two of the main characters.

D. discuss the sinking of the original *Titanic*.

Reporting Category/Learning Standard for Item 27: **Literature/Learning Standard 13**

28. In paragraph 5, the author uses a colon in order to

A. separate independent clauses.

B. separate fact from opinion.

C. show who's speaking.

D. signal a list of items.

Reporting Category/Learning Standard for Item 28: **Language/Learning Standard 5**

29. In paragraph 11, when Ebert says, "It's all so seamless," he means

A. the special effects create a realistic image.

B. the movie is shot in one take.

C. the older version of the movie is similar.

D. the movie is mysterious.

Reporting Category/Learning Standard for Item 29: **Literature/Learning Standard 13**

30. In paragraph 16, Cameron states that "the adrenaline was spiking." He uses this phrase to describe his experience as

A. painful.

B. humorous.

C. exciting.

D. ordinary.

Reporting Category/Learning Standard for Item 30: **Literature/Learning Standard 8**

㉛ In paragraph 16, "there's something about *Titanic* that's sort of mythic," refers to the ship as seeming to be

A. ancient.

B. immense.

C. legendary.

D. unusual.

Reporting Category/Learning Standard for Item 31: ***Literature/Learning Standard 8***

㉜ In paragraph 17, what did Lord Grade, producer of *Raise the Titanic!*, mean when he said, "It would have been cheaper to lower the ocean"?

A. Movies that are made about the *Titanic* usually cost a lot of money.

B. The movie *Raise the Titanic!* was an extremely expensive film.

C. Raising sunken ships, especially the *Titanic*, requires a big budget.

D. It is less expensive to lower the ocean's level than to raise a sunken ship.

Reporting Category/Learning Standard for Item 32: ***Literature/Learning Standard 13***

㉝ Based on this interview, which of the following statements would **best** describe Cameron's approach to directing the film *Titanic*?

A. Small details were deliberately overlooked because of the scope of the project.

B. Special effects, a strong story, and shooting his own footage were all important elements.

C. It was important to research and preserve the historical details of the passengers' lives.

D. He concentrated on character development rather than on special effects.

Reporting Category/Learning Standard for Item 33: ***Literature/Learning Standard 13***

Session 3, Open-Response Question

(34) Identify one aspect of the film that impressed Roger Ebert and explain why he was impressed. Use information from the selection to support your answer.

*Reporting Category/*Learning Standard for Item 34: ***Literature/*****Learning Standard 13**

Session 3, Reading Selection #2

The following selection is from the beginning of Arthur Miller's famous play Death of a Salesman. *Read the selection below. Use information from the selection to answer the questions that follow.*

Death of a Salesman

by Arthur Miller

Students read a selection titled "Death of a Salesman" and then answered questions 35 through 40 that follow on the next pages of this document. Due to copyright restrictions the passage cannot be released to the public in this document. For more information, see the copyright citation below.

From DEATH OF A SALESMAN by Arthur Miller, copyright 1949, renewed © 1977 by Arthur Miller. Used by permission of Viking Penguin, a division of Penguin Putnam Inc.

Session 3, Multiple-Choice Questions

35 Italics are used throughout **most** of this selection to

A. indicate stage directions.
B. stress the dialogue's importance.
C. summarize all the play's action.
D. separate thoughts from dialogue.

*Reporting Category/*Learning Standard for Item 35: ***Literature/*Learning Standard 17**

36 In paragraph 4, the playwright says, "The entire setting is wholly, or, in some places, partially transparent." This means that the audience watching the play

A. can only see Willy's kitchen.
B. can see through walls, buildings, and some objects.
C. cannot determine if events occur inside or outside.
D. cannot hear thoughts and inner dialogue.

*Reporting Category/*Learning Standard for Item 36: ***Literature/*Learning Standard 17**

37 In paragraph 5, Willy Loman can **best** be described as

A. impatient.
B. weary.
C. angry.
D. suspicious.

*Reporting Category/*Learning Standard for Item 37: ***Literature/*Learning Standard 17**

38 In paragraph 6, the word *repression* is **best** defined as

A. liberation.
B. commitment.
C. denial.
D. confusion.

*Reporting Category/*Learning Standard for Item 38: ***Language/*Learning Standard 4**

㊴ In paragraphs 7–11 of this selection, a colon is used in each line. The non-italicized words after the colon indicate

A. description.

B. setting.

C. dialogue.

D. action.

*Reporting Category/*Learning Standard for Item 39: ***Literature/*Learning Standard 17**

This is a dictionary entry for the word *mercurial.*

mer•cu•ri•al (mer kyoor e el) *adj.*
1. Myth. Having to do with the Roman god Mercury. **2.** Astron. Having to do with the planet Mercury.
3. Characterized by shrewdness, swiftness, etc., shown by the god Mercury. **4.** Having a temperament that is changeable. [ME, of the planet Mercury < Lat. *mercurialis*].
—mer cu ri al ly *adv.*

㊵ According to the entry, from which language did *mercurial* originate?

A. French

B. Old Greek

C. Latin

D. Middle English

*Reporting Category/*Learning Standard for Item 40: ***Language/*Learning Standard 5**

VI. Mathematics, Grade 4

Mathematics, Grade 4

The spring 2002 Grade 4 MCAS Mathematics test was based on the learning standards of the Massachusetts *Mathematics Curriculum Framework* (2000). The *Framework* identifies five major content strands:

- Number Sense and Operations
- Patterns, Relations, and Algebra
- Geometry
- Measurement
- Data Analysis, Statistics, and Probability

Curriculum Framework *Learning Standards* for Grades 3-4

Learning standards are grouped below by content strand and are directly quoted from the *Framework*; applicable *Framework* page numbers are shown in parentheses.

Number Sense and Operations (*Framework*, pp. 22-23)

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Exhibit an understanding of the base ten number system by reading, modeling, writing, and interpreting whole numbers to at least 100,000; demonstrating an understanding of the values of the digits; and comparing and ordering the numbers.
- Represent, order, and compare large numbers (to at least 100,000) using various forms, including expanded notation (e.g., $853 = 8 \times 100 + 5 \times 10 + 3$).
- Demonstrate an understanding of fractions as parts of unit wholes, as parts of a collection, and as locations on the number line.
- Select, use, and explain models to relate common fractions and mixed numbers (1/2, 1/3, 1/4, 1/5, 1/6, 1/8, 1/10, 1/12, and 1½), find equivalent fractions, mixed numbers, and decimals, and order fractions.
- Identify and generate equivalent forms of common decimals and fractions less than one whole (halves, quarters, fifths, and tenths).
- Exhibit an understanding of the base ten number system by reading, naming, and writing decimals between 0 and 1 up to the hundredths.

- Recognize classes (in particular, odds, evens; factors or multiples of a given number; and squares) to which a number may belong, and identify the numbers in those classes. Use these in the solution of problems.
- Use various meanings and models of multiplication and division of whole numbers. Understand and use the inverse relationship between the two operations.
- Select, use, and explain the commutative, associative, and identity properties of operations on whole numbers in problem situations (e.g., $37 \times 46 = 46 \times 37$, $(5 \times 7) \times 2 = 5 \times (7 \times 2)$).
- Select and use appropriate operations (addition, subtraction, multiplication, and division) to solve problems, including those involving money.
- Add and subtract (up to five-digit numbers) and multiply (up to three digits by two digits) accurately and efficiently.[1]
- Divide up to a three-digit whole number with a single-digit divisor (with or without remainders) accurately and efficiently. Interpret any remainders.
- Demonstrate in the classroom an understanding of and the ability to use the conventional algorithm for division of up to a three-digit whole number with a single-digit divisor (with or without remainders).
- Round whole numbers through 100,000 to the nearest 10, 100, 1000, 10,000, and 100,000.
- Select and use a variety of strategies (e.g., front-end, rounding, and regrouping) to estimate quantities, measures, and the results of whole-number computations up to three-digit whole numbers and amounts of money to $1000, and to judge the reasonableness of the answer.
- Use concrete objects and visual models to add and subtract common fractions.

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[1] Although this standard is appropriate as stated for this grade span, MCAS at the 3–4 grade span currently tests multiplication of only up to two digits by two digits.

Patterns, Relations, and Algebra (*Framework*, p. 32)

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Create, describe, extend, and explain symbolic (geometric) and numeric patterns, including multiplication patterns like 3, 30, 300, 3000, ...
- Use symbol and letter variables (e.g., Δ, x) to represent unknowns or quantities that vary in expressions and in equations or inequalities (mathematical sentences that use $=$, $<$, $>$).
- Determine values of variables in simple equations (e.g., $4106 - \nabla = 37$, $5 = \bigcirc + 3$, and $\square - \bigcirc = 3$).
- Use pictures, models, tables, charts, graphs, words, number sentences, and mathematical notations to interpret mathematical relationships.
- Solve problems involving proportional relationships, including unit pricing (e.g., four apples cost 80¢, so one apple costs 20¢) and map interpretation (e.g., one inch represents five miles, so two inches represent ten miles).
- Determine how change in one variable relates to a change in a second variable (e.g., input-output tables).

Geometry (*Framework*, p. 40)

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Compare and analyze attributes and other features (e.g., number of sides, faces, corners, right angles, diagonals, and symmetry) of two- and three-dimensional geometric shapes.
- Describe, model, draw, compare, and classify two- and three-dimensional shapes (e.g., circles, polygons—especially triangles and quadrilaterals—cubes, spheres, and pyramids).
- Identify angles as acute, right, or obtuse.
- Describe and draw intersecting, parallel, and perpendicular lines.
- Using ordered pairs of numbers and/or letters, graph, locate, identify points, and describe paths (first quadrant).
- Describe and apply techniques such as reflections (flips), rotations (turns), and translations (slides) for determining if two shapes are congruent.
- Identify and describe line symmetry in two-dimensional shapes.
- Predict and validate the results of partitioning, folding, and combining two- and three-dimensional shapes.

Measurement (*Framework*, p. 48)

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Demonstrate an understanding of such attributes as length, area, weight, and volume, and select the appropriate type of unit for measuring each attribute.
- Carry out simple unit conversions within a system of measurement (e.g., hours to minutes, cents to dollars, yards to feet or inches, etc.).
- Identify time to the minute on analog and digital clocks using A.M. and P.M. Compute elapsed time using a clock (e.g., hours and minutes since ...) and using a calendar (e.g., days since ...).
- Estimate and find area and perimeter of a rectangle, triangle, or irregular shape using diagrams, models, and grids or by measuring.
- Identify and use appropriate metric and English units and tools (e.g., ruler, graduated cylinder, thermometer) to estimate, measure, and solve problems involving length, area, volume, weight, time, and temperature.

Data Analysis, Statistics, and Probability (*Framework*, p. 56)

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Collect and organize data using observations, measurements, surveys, or experiments, and identify appropriate ways to display the data.
- Match a representation of a data set such as lists, tables, or graphs (including circle graphs) with the actual set of data.
- Construct, draw conclusions, and make predictions from various representations of data sets, including tables, bar graphs, pictographs, line graphs, line plots, and tallies.
- Represent the possible outcomes for a simple probability situation (e.g., the probability of drawing a red marble from a bag containing three red marbles and four green marbles).
- List and count the number of possible combinations of objects from three sets (e.g., how many different outfits can one make from a set of three shirts, a set of two skirts, and a set of two hats?).
- Classify outcomes as certain, likely, unlikely, or impossible by designing and conducting experiments using concrete objects such as counters, number cubes, spinners, or coins.

MCAS Reporting Categories

In *Test Item Analysis Reports* and on the *Subject Area Subscore* pages of the MCAS *School* and *District Reports,* Mathematics test results are reported under the following five MCAS reporting categories, which are identical to the five *Mathematics Curriculum Framework* content strands:

- Number Sense and Operations
- Patterns, Relations, and Algebra
- Geometry
- Measurement
- Data Analysis, Statistics, and Probability

MCAS Spring 2002 Common Test Items
Mathematics, Grade 4

Test Sessions

MCAS grade 4 Mathematics Student Test Booklets contained 2 separate test sessions. Each session included multiple-choice, short-answer, and open-response questions.

Mathematics Tool Kits

During testing, each grade 4 student was provided with a **Mathematics Tool Kit**. A sample of that Tool Kit is included in Appendix A of this document. No calculators or other reference tools or materials were allowed during grade 4 Mathematics testing sessions.

Cross-Reference Information

The shaded bar underneath each item indicates the item's MCAS reporting category, which is also the name of the *Framework* content strand that contains the learning standards assessed by the item.

Session 1, Multiple-Choice Questions

① Ming and Andrew made a cake and cut it into 8 equal pieces. They gave 3 pieces to Susan. What fraction of the cake is left?

A. $\frac{7}{8}$

B. $\frac{5}{8}$

C. $\frac{3}{8}$

D. $\frac{1}{8}$

Reporting Category for Item 1: ***Number Sense and Operations***

② Steve checked out a book and a video from the local library. They were three days overdue when he returned them. The fine was 15 cents for each day the book was overdue, and 25 cents for each day the video was overdue.

How much did Steve owe?

A. $0.40

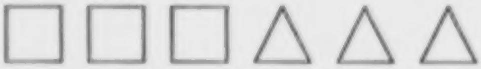
B. $0.45

C. $0.75

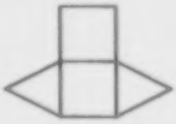
D. $1.20

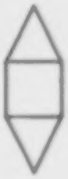
Reporting Category for Item 2: ***Number Sense and Operations***

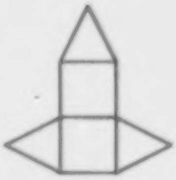
③ In art class, Raúl was given the shapes shown below.

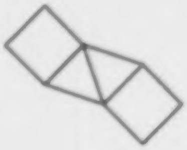


Raúl used some of the shapes to make a design that had 2 lines of symmetry. Which of the following could be his design?

A. 

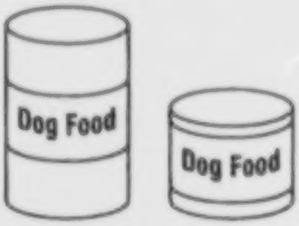
B. 

C. 

D. 

Reporting Category for Item 3: ***Geometry***

④ A large can of dog food costs $0.75 more than a small can of dog food.



If ☐ represents the price of one large can of dog food, which expression shows the price of one small can of dog food?

A. ☐ − $0.75

B. $0.75 − ☐

C. ☐ + $0.75

D. $0.75 × ☐

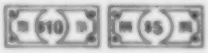
Reporting Category for Item 4: ***Patterns, Relations, and Algebra***

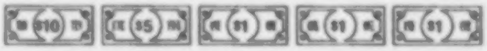
Mathematics, Grade 4

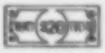
⑤ Titus went to the pet store to buy the following items for his dog.

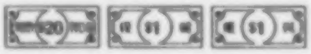
Ball	**$1.73**
Chew Bone	**$4.29**
Leash	**$7.55**
Shampoo	**$2.29**

Which of the following is the **least** amount of money needed to pay for all of his items?

A. 

B. 

C. 

D. 

*Reporting Category for Item 5: **Number Sense and Operations***

⑥ Sasha has a bag with

- 5 grey balls,
- 3 white balls, and
- 4 striped balls.

If she takes a ball out of the bag without looking, what are her chances of getting a white ball?

A. 1 chance out of 3

B. 3 chances out of 9

C. 3 chances out of 12

D. 9 chances out of 12

*Reporting Category for Item 6: **Data Analysis, Statistics, and Probability***

⑦ Which of the following is equal to 104 × 50?

A. (100 × 5) + (4 × 5)

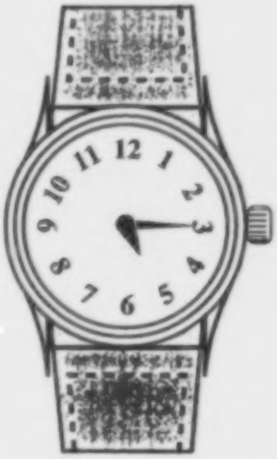
B. (100 × 5) + (4 × 50)

C. (100 × 50) + (4 × 50)

D. (100 × 50) + (40 × 50)

Reporting Category for Item 7: ***Number Sense and Operations***

⑧ Jamal started playing a video game at 4:30 P.M. When the game was over, he looked at his watch which showed this time.



How long did the game last?

A. 1 hour, 45 minutes

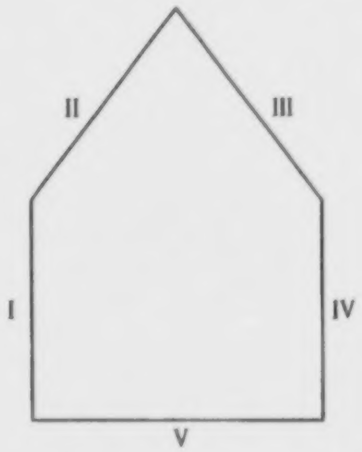
B. 1 hour, 15 minutes

C. 85 minutes

D. 45 minutes

Reporting Category for Item 8: ***Measurement***

⑨ Marta drew the figure shown below.



In Marta's drawing, which two line segments appear to be parallel?

A. I and IV

B. II and III

C. III and V

D. IV and V

Reporting Category for Item 9: ***Geometry***

Mathematics, Grade 4

Session 1, Open-Response Question

10 Murray's parents took him and his sister to a restaurant for dinner. Murray and his sister ordered tacos.

Taco Dinner

Shells	Fillings	Toppings	Drinks
Hard	Beef	Cheese	Lemonade
Soft	Chicken	Lettuce	Water
	Bean	Tomato	
		Onions	

a. Murray's sister orders a hard-shell chicken taco with lemonade. She wants to choose 3 toppings on the menu shown. List all the possible combinations of 3 toppings that can be made from the 4 choices on the menu.

b. Murray has to decide what kind of taco and drink he wants. List all the possible combinations of 1 shell, 1 filling, and 1 drink he can make from the choices on the menu. (Do not include toppings.)

c. Do you think you have found all the possible combinations? Explain your answer.

Reporting Category for Item 10: ***Data Analysis, Statistics, and Probability***

Session 1, Short-Answer Questions

⑪ Charles folded this square paper below in half so the two halves matched **exactly**. He folded it in half two different ways.

What two different shapes could Charles have made by folding the paper in half?

Reporting Category for Item 11: ***Geometry***

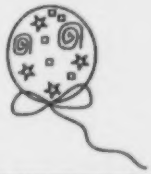
⑫ Haigar is going to shade all the squares that are multiples of 5 on the Hundreds Chart shown below. How many squares must he shade?

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Reporting Category for Item 12: ***Number Sense and Operations***

Session 1, Open-Response Question

Plain balloons
12¢ each



Fancy balloons
16¢ each

⑬ Plain balloons cost 12¢ each. Fancy balloons cost 16¢ each.

a. What would be the total cost for 5 plain and 5 fancy balloons? Explain how you got your answer using pictures, numbers, or words.

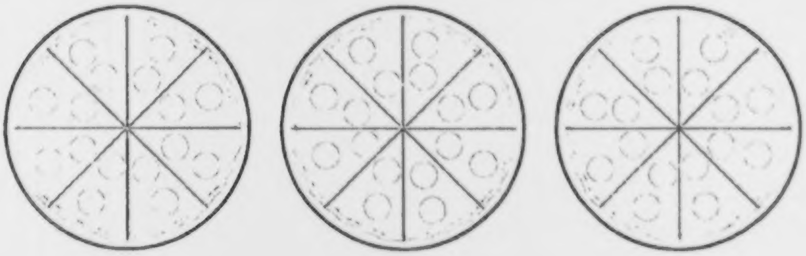
b. Mason bought 10 balloons that cost a total of $1.36. He bought at least one plain balloon and one fancy balloon. How many of each kind of balloon did Mason buy? Show or explain how you got your answer using pictures, numbers, or words.

c. Is there a different way that Mason could have gotten 10 balloons for **exactly** $1.36? Explain why or why not using pictures, numbers, or words.

Reporting Category/Learning Standard for Item 13: ***Patterns, Relations, and Algebra***

Session 1, Multiple-Choice Questions

⑭ At a class party, 3 pizzas were ordered for the children. Each pizza was divided into 8 equal slices.



Each child ate 2 slices, and there was a quarter of one pizza left. How many children were at the party?

A. 11

B. 12

C. 18

D. 22

Reporting Category for Item 14: ***Number Sense and Operations***

⑮ Josh rounded the number 36,796

- to the nearest ten;
- to the nearest hundred;
- to the nearest thousand;
- to the nearest ten-thousand.

Which two roundings should have produced the same answer?

A. nearest ten and nearest hundred

B. nearest hundred and nearest thousand

C. nearest ten and nearest thousand

D. nearest hundred and nearest ten-thousand

Reporting Category for Item 15: ***Number Sense and Operations***

⑯ Harry has 6 markers, and Rico has 10 markers. Which of the following actions would result in Harry and Rico having the same number of markers?

A. Harry gives 2 of his markers to Rico.

B. Harry gives 4 of his markers to Rico.

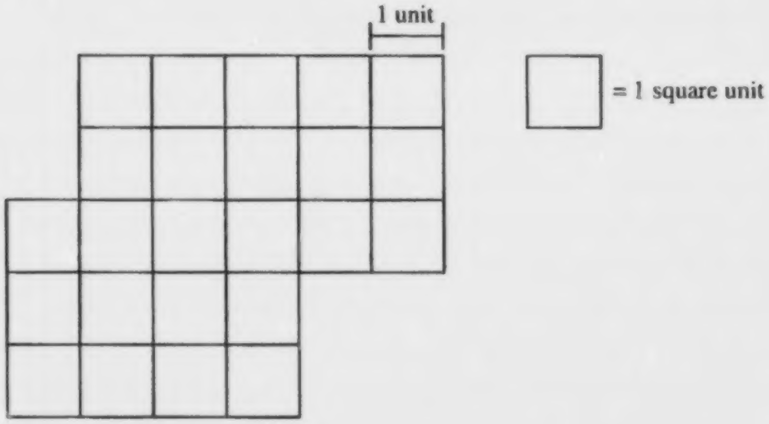
C. Rico gives 2 of his markers to Harry.

D. Rico gives 4 of his markers to Harry.

Reporting Category for Item 16: ***Number Sense and Operations***

Session 1, Open-Response Question

⑰ The picture below shows the shape of a new playground.



a. What is the perimeter of the playground? Explain how you got your answer using pictures, numbers, or words.

b. What is the area in square units of the playground? Explain how you got your answer using pictures, numbers, or words.

c. Another plan for the playground would make it a square shape with a perimeter of 32 units. What would be the area of this playground in square units? Explain how you got your answer using pictures, numbers, or words.

Reporting Category for Item 17: ***Measurement***

Session 2, Multiple-Choice Questions

⑱ Micah left for school with 4 boxes of pencils. Each box had 6 pencils. At school, he gave away 4 pencils from one box. Which number sentence below can be used to find the total number of pencils that were left?

A. $4 \times 6 - 4 = \square$

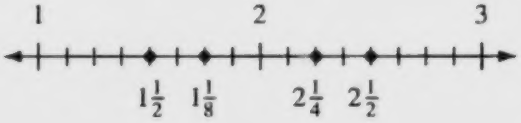
B. $4 \times 6 + 2 = \square$

C. $3 \times 6 + 4 = \square$

D. $3 \times 6 - 2 = \square$

Reporting Category for Item 18: ***Patterns, Relations, and Algebra***

⑲ Which point is incorrectly labeled on the number line shown below?



A. $1\frac{1}{2}$

B. $1\frac{1}{8}$

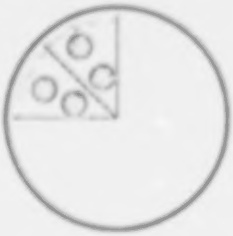
C. $2\frac{1}{4}$

D. $2\frac{1}{2}$

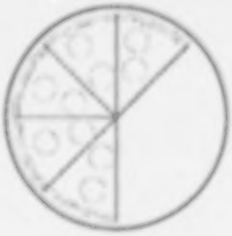
Reporting Category for Item 19: ***Number Sense and Operations***

⑳ Jesse and Fred shared a pizza. Jesse ate $\frac{1}{8}$ of the pizza, and Fred ate $\frac{1}{2}$ of the pizza. Which picture shows how much pizza was **left**?

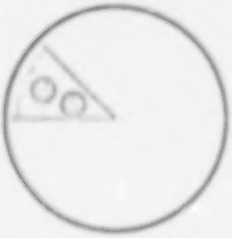
A.



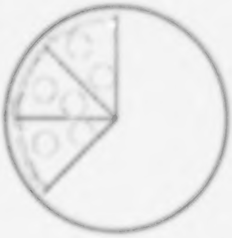
B.



C.

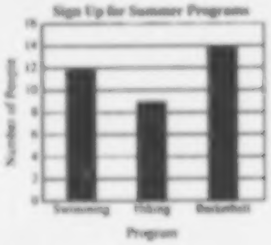


D.



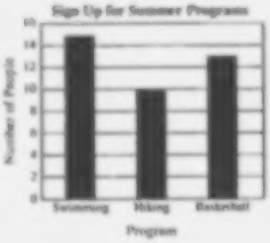
Reporting Category for Item 20: ***Number Sense and Operations***

㉑ The town of Raymond offered swimming, hiking, and basketball programs to people last summer. The graph below shows the number of people who signed up in advance for each program.

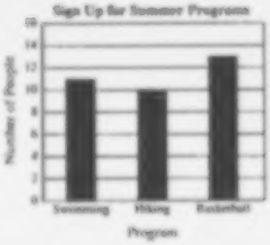


At the last minute, 2 people dropped out of the swimming program, 1 person joined the hiking program, and 1 person switched from basketball to swimming. Which graph shows the correct information after these changes?

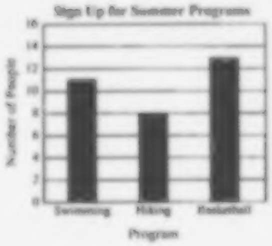
A.



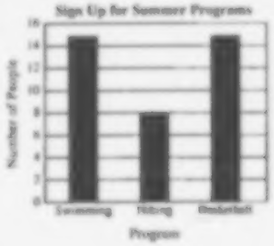
B.



C.



D.



Reporting Category for Item 21: ***Data Analysis, Statistics, and Probability***

Mathematics, Grade 4

㉒ Tynan used small squares to make each figure shown in the arithmetic pattern below.

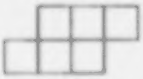


Figure 1

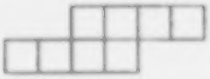


Figure 2

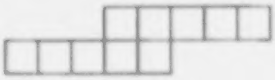


Figure 3

□ = small square

Figure	1	2	3	4	5	6	7	8	9	10
Number of Small Squares	6	8	10							?

If the pattern continues, how many small squares will be in Figure 10?

A. 20

B. 22

C. 24

D. 26

Reporting Category for Item 22: ***Patterns, Relations, and Algebra***

㉓ Louise was reciting the 26 letters of the alphabet in groups of 3: "ABC, DEF, GHI, . . . " Before she could finish, her friend Heather said, "There will be 2 letters left over."

Which of the following suggests that Heather is correct?

A. 13 multiplied by 2 equals 26.

B. 6 divided by 3 equals 2.

C. 26 divided by 3 leaves a remainder of 2.

D. 26 divided by 4 leaves a remainder of 2.

Reporting Category for Item 23: ***Number Sense and Operations***

㉔ Ryan, Jodi, Tess, and Jeremy had a checkers tournament. The chart below shows the results.

Checkers Tournament Results

Name	Wins	Losses	Total Games
Ryan	1	5	6
Jodi	3	3	6
Tess	6	0	6
Jeremy	2	4	6

Which player won exactly $\frac{1}{2}$ of the games that he or she played?

A. Ryan

B. Jodi

C. Tess

D. Jeremy

Reporting Category for Item 24: ***Data Analysis, Statistics, and Probability***

㉕ Claire has 3 bags of marbles with 8 marbles in each bag. Leo has 8 bags of marbles with 3 marbles in each bag. Which number sentence shows that Claire and Leo have the SAME number of marbles?

A. $3 + 8 = 8 + 3$

B. $8 - 3 = 3 - 8$

C. $8 \times 3 = 3 \times 8$

D. $8 - 3 = 5$

Reporting Category for Item 25: ***Number Sense and Operations***

㉖ A pattern was used to determine the number of black tiles and the number of white tiles in each figure below.

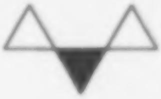


Figure 1

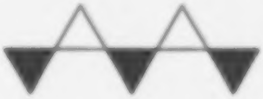


Figure 2

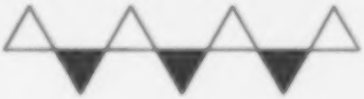


Figure 3

If the pattern continues, how many black tiles will there be in Figure 5?

A. 3

B. 4

C. 5

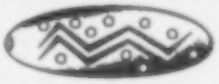
D. 7

Reporting Category for Item 26: ***Patterns, Relations, and Algebra***

Session 2, Open-Response Question

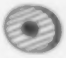
㉗ Taylor can choose from the materials below to make a bracelet.

Large Oval Bead - 50¢

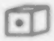


Small Round Beads - 20 for $1.00

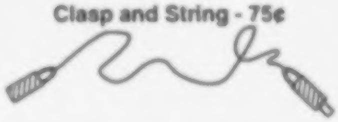
Large Round Bead - 10¢



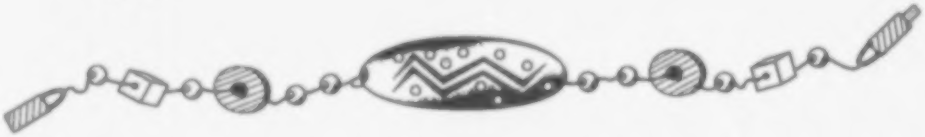
Square Bead - 10¢



Clasp and String - 75¢



a. Based on the prices above, what would the materials for the bracelet shown below cost? Explain how you got your answer using pictures, numbers, or words.



b. Taylor used just square beads and small round beads to make a bracelet that cost the same as the bracelet above. Remember that she must also use a clasp and string. How many of each kind of bead did she use? Explain how you got your answer using pictures, numbers, or words.

c. Design your own bracelet. The total cost must be between $5 and $8. You must use at **least** one of each kind of bead. Tell how many of each kind of bead are in your bracelet and give the total cost of your bracelet. Remember that you must use a clasp and string.

Reporting Category for Item 27: ***Number Sense and Operations***

Session 2, Short-Answer Questions

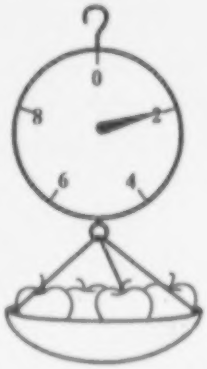
㉘ Rose, Jamella, and Felix each measured the length of a room using their own feet as measuring tools.

- Rose reported a length that measured 30 of her feet.
- Jamella reported a length that measured 47 of her feet.
- Felix reported a length that measured 36 of his feet.

Which of the three students had the smallest feet?

Reporting Category for Item 28: ***Measurement***

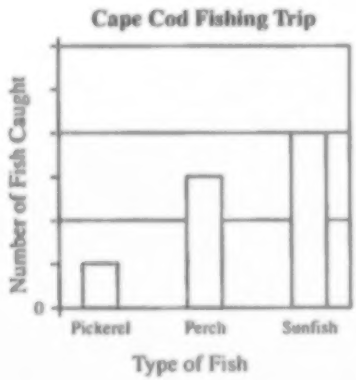
㉙ The scale shows how much 4 apples weigh.



How much would 10 apples of the same size weigh?

Reporting Category for Item 29: ***Patterns, Relations, and Algebra***

㉚ Julia and her father went fishing in a pond on Cape Cod. Julia made this graph to show how many fish they caught, but she forgot to put numbers on the graph.

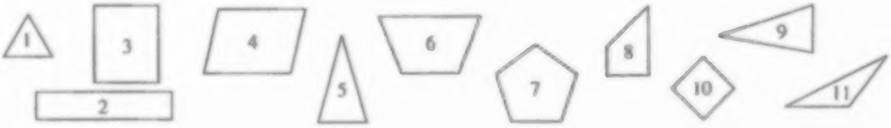


Julia and her father caught 3 pickerel and 12 sunfish. **About** how many perch did they catch?

Reporting Category for Item 30: ***Data Analysis, Statistics, and Probability***

Session 2, Open-Response Question

(31) Liu is separating the figures below into groups according to their properties. There are at least three figures in each group. So far, he has made two different groups.

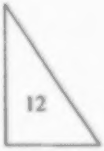


a. List at least 3 figures that could go into each group. Explain what all the figures in each group have in common.

Group A

Group B

b. Would figure 12 shown below belong to one of the groups above? Explain why or why not.

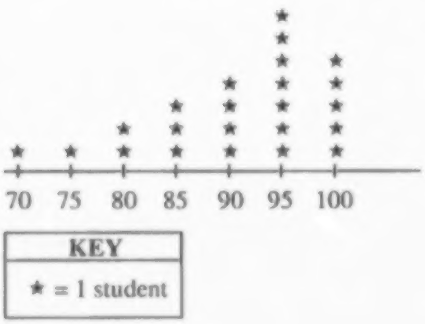


Reporting Category for Item 31: ***Geometry***

Session 2, Multiple-Choice Questions

㉜ The line plot below shows how students scored on last week's vocabulary test.

Vocabulary Test Scores



How many students scored 95 or higher on the test?

A. 5 students

B. 7 students

C. 12 students

D. 16 students

Reporting Category for Item 32: ***Data Analysis, Statistics, and Probability***

㉝ Which word problem below could be represented by the number sentence $5 \times 3 = 15$?

A. Lynda had 5 notebooks. She bought 3 more notebooks. How many notebooks did she have?

B. Lynda bought 5 packages of notebooks with 3 notebooks in each package. How many notebooks did she buy?

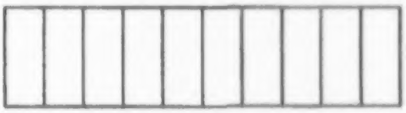
C. Lynda had 5 notebooks. She gave away 3 of them. How many notebooks did she have left?

D. Lynda had 5 packages of notebooks. She put the notebooks in 3 stacks. How many notebooks were in each stack?

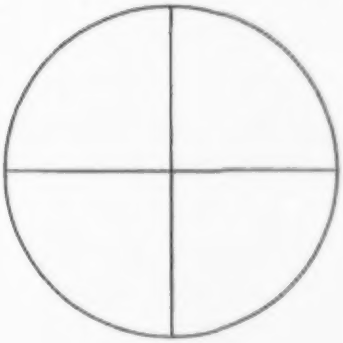
Reporting Category for Item 33: ***Patterns, Relations, and Algebra***

㉞ Which of the following does **not** represent 0.4?

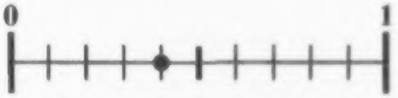
A.



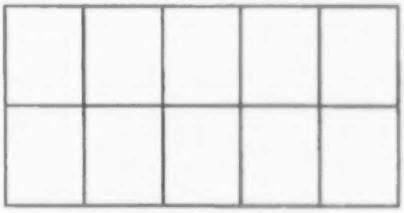
B.



C.

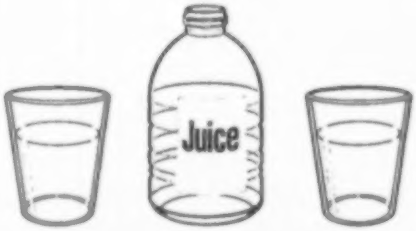


D.



Reporting Category for Item 34: ***Number Sense and Operations***

㉟ Minh opened a bottle containing 1 liter of juice. If she shared the juice equally with her sister Anne, how many milliliters (mL) of juice will each get? (1 liter = 1000 mL)



A. 20 milliliters
B. 50 milliliters
C. 200 milliliters
D. 500 milliliters

Reporting Category for Item 35: ***Measurement***

㊱ Dwayne used a rule to make the list of numbers shown.

1, 2, 5, 10, 17, ___?___

If he uses the same rule to continue the list, which number should he write next?

A. 20
B. 22
C. 24
D. 26

Reporting Category for Item 36: ***Patterns, Relations, and Algebra***

(37) Amelia has 47 strawberries to put in 5 baskets. She wants to put the same number of strawberries in each basket. If she evenly divides the strawberries among the 5 baskets, how many strawberries will be left over?

A. 7

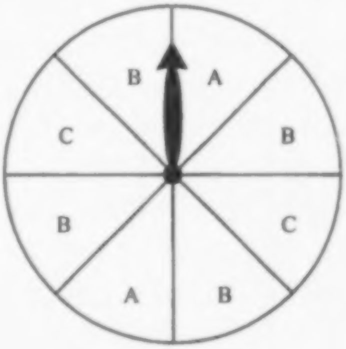
B. 2

C. 5

D. 3

Reporting Category for Item 37: ***Number Sense and Operations***

(38) The spinner below is used in a game. All the spaces on the spinner are the same size.



Which of the following statements about the spinner is true?

A. The arrow has an equal chance of stopping on a space marked A, B, or C.

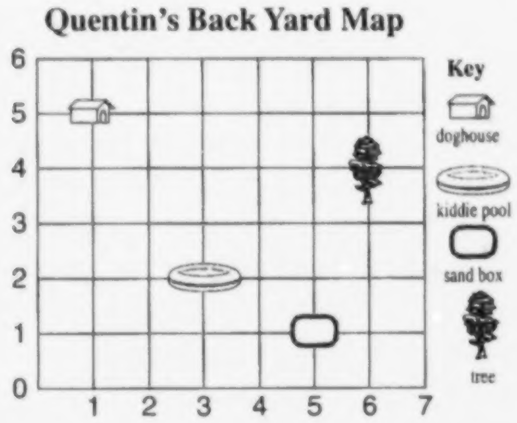
B. The arrow has no chance of stopping on a space marked A.

C. The arrow is most likely to stop on a space marked B.

D. The arrow is least likely to stop on a space marked C.

Reporting Category for Item 38: ***Data Analysis, Statistics, and Probability***

(39) For a school project, Quentin had to make a grid map of his back yard. His map looked like this:


Quentin's Back Yard Map
6
5
4
3
2
1
0
1
2
3
4
5
6
7
Key
doghouse
kiddie pool
sand box
tree

Which ordered pair gives the location of the doghouse?

A. (6, 4)

B. (5, 1)

C. (3, 2)

D. (1, 5)

Reporting Category for Item 39: ***Geometry***

VII. Mathematics, Grade 6

Mathematics, Grade 6

The spring 2002 Grade 6 MCAS Mathematics test was based on the learning standards of the Massachusetts *Mathematics Curriculum Framework* (2000). The *Framework* identifies five major content strands:

- Number Sense
- Patterns, Relations, and Algebra
- Geometry
- Measurement
- Data Analysis, Statistics, and Probability

Curriculum Framework *Learning Standards* for Grades 5-6

Learning standards are grouped below by content strand and are directly quoted from the *Framework*; applicable *Framework* page numbers are shown in parentheses.

Number Sense and Operations (*Framework*, pp. 25-26)

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Demonstrate an understanding of positive integer exponents, in particular, when used in powers of ten (e.g., 10^2, 10^5).
- Demonstrate an understanding of place value to billions and thousandths.
- Represent and compare very large (billions) and very small (thousandths) positive number in various forms such as expanded notation without exponents (e.g., $9724 = 9 \times 1000 + 7 \times 100 + 2 \times 10 + 4$).
- Demonstrate an understanding of fractions as a ratio of whole numbers, as parts of units wholes, as part of a collection, and as locations on the number line.
- Identify and determine common equivalent fractions, mixed numbers, decimals, and percents.
- Find and position integers, fractions, mixed numbers, and decimals (both positive and negative) on the number line.
- Compare and order integers (including negative integers), and positive fractions, mixed numbers, decimals, and percents.
- Apply number theory concepts including prime and composite numbers, prime factorization, greatest common factor, least common multiple, and divisibility rules for 2, 3, 4, 5, 6, 9, and 10 to the solution problems.

- Select and use appropriate operations to solve problems involving addition, subtraction, multiplication, division, and positive integer exponents with whole numbers, and with positive fractions, mixed numbers, decimals, and percents.
- Use the number line to model addition and subtraction of integers, with the exception of subtracting negative integers.
- Apply the Order of Operations for expressions involving addition, subtraction, multiplication, and division with grouping symbols (+ , − , × , ÷).
- Demonstrate an understanding of the inverse relationship of addition and subtraction, and use that understanding to simplify computation and solve problems.
- Accurately and efficiently add, subtract, multiply, and divide (with double-digit divisors) whole number and positive decimals.
- Accurately and efficiently add, subtract, multiply, and divide positive fractions and mixed numbers. Simplify fractions.
- Add and subtract integers with the exception of subtracting negative integers.
- Estimate results of computations with whole numbers and with positive fractions, mixed numbers, decimals, and percents. Describe reasonableness of estimates.

Patterns, Relations, and Algebra (*Framework*, p. 34)

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Analyze and determine the rules for extending symbolic, arithmetic, and geometric patterns and progressions (e.g., ABBCCC; 1, 5, 9, 13 ...; 3, 9, 27, ...).
- Replace variables with given values and evaluate/simplify (e.g., 2(○) + 3 when ○ = 4).
- Use the properties of equality to solve problems (e.g., if □ + 7 = 13, then □ = 13 − 7, therefore □ = 6; if 3 × □ = 15, then $\frac{1}{3}$ × 3 × □ = $\frac{1}{3}$ × 15, therefore □ = 5).
- Represent real situations and mathematical relationships with concrete models, tables, graphs, and rules in words and with symbols (e.g., input-output tables).
- Solve linear equations using concrete models, tables, graphs, and paper-pencil methods.
- Produce and interpret graphs that represent the relationship between two variables in everyday situations.
- Identify and describe relationships between two variables with a constant rate of change. Contrast these with relationships where the rate of change is not constant.

Geometry (*Framework*, p. 42)

Students engage in problem solving communicating, reasoning, connecting, and representing as they:

- Identify polygons based on their properties, including types of interior angles, perpendicular or parallel sides, and congruence of sides (e.g., squares, rectangles, rhombuses, parallelograms, trapezoids, and isosceles, equilateral, and right triangles).
- Identify three-dimensional shapes (e.g., cubes, prisms, spheres, cones, and pyramids) based on their properties, such as edges and faces.
- Identify relationships among points, lines, and planes (e.g., intersecting, parallel, perpendicular).
- Graph points and identify coordinates of points on the Cartesian coordinate plane (all four quadrants).[2]
- Find the distance between two points on horizontal or vertical number lines.
- Predict, describe, and perform transformations on two-dimensional shapes (e.g., translations, rotations, and reflections).
- Identify types of symmetry, including line and rotational.
- Determine if two shapes are congruent by measuring sides or a combination of sides and angles, as necessary; or by motions or series of motions (e.g., translations, rotations, and reflections).
- Match three-dimensional objects and their two-dimensional representations (e.g., nets, projections, and perspective drawings).

Measurement (*Framework*, p. 50)

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Apply the concepts of perimeter and area to the solution of problems. Apply formulas where appropriate.
- Identify, measure, describe, classify, and construct various angles, triangles, and quadrilaterals.
- Solve problems involving proportional relationships and units of measurement (e.g., same system unit conversions, scale models, maps, and speed).
- Find areas of triangles and parallelograms. Recognize that shapes with the same number of sides but different appearances can have the same area. Develop strategies to find the area of more complex shapes.
- Identify, measure, and describe circles and the relationships of the radius, diameter, circumference, and area (e.g., $d = 2r$, $\pi = C/d$), and use the concepts to solve problems.

---

[2] Although this standard is important and appropriate for this grade span, it is not currently included in MCAS at the 5-6 grade span.

- Find volumes and surface areas of rectangular prisms.
- Find the sum of the angles in simple polygons (up to eight sides) with and without measuring the angles.

Data Analysis, Statistics, and Probability (*Framework*, p. 58)

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Describe and compare data sets using the concepts of median, mean, mode, maximum and minimum, and range.
- Construct and interpret stem-and-leaf plots, line plots, and circle graphs.
- Use tree diagrams and other models (e.g., lists and tables) to represent possible or actual outcomes of trials. Analyze the outcomes.
- Predict the probability of outcomes of simple experiments (e.g., tossing a coin, rolling a die) and test the predictions. Use appropriate ratios between 0 and 1 to represent the probability of the outcome and associate the probability with the likelihood of the event.

MCAS Reporting Categories

In *Test Item Analysis Reports* and on the *Subject Area Subscore* pages of the MCAS *School* and *District Reports*, Mathematics test results are reported under the following five MCAS reporting categories, which are identical to the five *Mathematics Curriculum Framework* content strands:

- Number Sense and Operations
- Patterns, Relations, and Algebra
- Geometry
- Measurement
- Data Analysis, Statistics, and Probability

MCAS Spring 2002 Common Test Items
Mathematics, Grade 6

Test Sessions

MCAS grade 6 Mathematics Student Test Booklets contained 2 separate test sessions. Each session included multiple-choice, short-answer, and open-response questions.

Reference Materials and Tools

During testing, each grade 6 student was provided with a **Mathematics Reference Sheet** and a **Mathematics Tool Kit**. A sample of the Grade 6 Mathematics Reference Sheet and a Mathematics Tool Kit is included in Appendix A of this document.

No calculators or other reference tools or materials were allowed during grade 6 Mathematics testing sessions.

Cross-Reference Information

The shaded bar underneath each item indicates the item's MCAS reporting category, which is also the name of the *Framework* content strand that contains the learning standards assessed by the item.

Session 1, Multiple-Choice Questions

① Which of these numbers is evenly divisible by 3?

A. 1,587,039

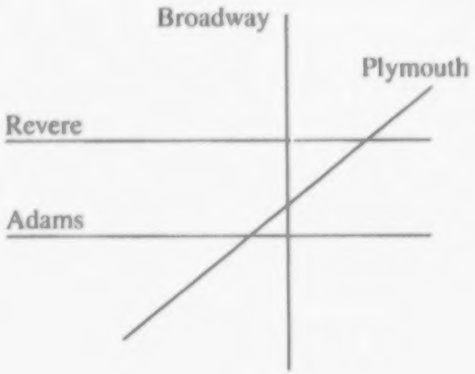
B. 1,687,093

C. 2,578,031

D. 2,687,096

Reporting Category for Item 1: ***Number Sense and Operations***

Use the map below to answer question 2.



② Which two streets on the map above appear to be parallel?

A. Broadway and Adams

B. Broadway and Plymouth

C. Adams and Plymouth

D. Adams and Revere

Reporting Category for Item 2: ***Geometry***

③ The stem-and-leaf plot below shows how a class of sixth-graders scored on a math test.

Sixth-Grade Math Scores

3	2
4	7
5	1 5 5 5 8
6	4 5
7	3 4 7
8	7 8
9	1 3 3 7 9 9

A score of 63 or higher is passing. How many sixth-graders passed this math test?

Remember
6|1 = 61

A. 7

B. 13

C. 11

D. 17

Reporting Category for Item 3: ***Data Analysis, Statistics, and Probability***

④ Sara hired her brother James to help her sell lemonade. Sara agreed to pay James $1.00, plus $0.10 for each glass of lemonade that he sold. Sara paid James $3.60. How many glasses of lemonade did James sell?

A. 26

B. 36

C. 46

D. 56

Reporting Category for Item 4: ***Patterns, Relations, and Algebra***

⑤ Teresa is covering the floor of her kitchen with tiles. Each square tile covers 4 square feet. If her kitchen floor is a rectangle measuring 16 feet by 10 feet, how many tiles will she need?

A. 13

B. 26

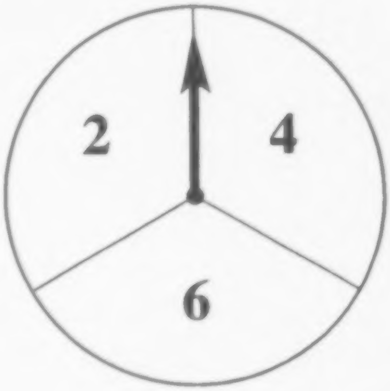
C. 30

D. 40

Reporting Category for Item 5: ***Measurement***

Use the spinner below to answer question 6.

⑥ Ramón is going to spin the arrow on the spinner twice and add the results.



What is the **most likely** sum of the two spins?

A. 6

B. 8

C. 10

D. 12

Reporting Category for Item 6: ***Data Analysis, Statistics, and Probability***

⑦ Earth's atmosphere is 78.08% nitrogen and 20.95% oxygen. What percent of Earth's atmosphere is made up of gases other than nitrogen and oxygen?

A. 0.0097

B. 0.097

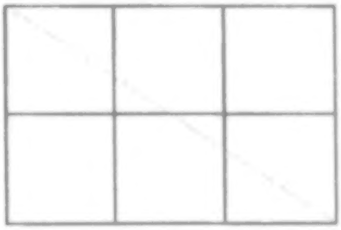
C. 0.97

D. 97

Reporting Category for Item 7: ***Number Sense and Operations***

Mathematics, Grade 6

⑧ Each of the 6 small squares in the figure below measures 1 inch on each side.



Which of the following is **closest** to the area of the shaded portion of the figure?

A. 2 square inches

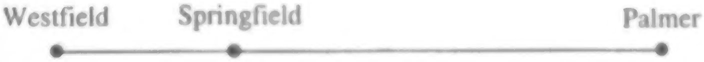
B. 3 square inches

C. 4 square inches

D. 5 square inches

Reporting Category for Item 8: ***Measurement***

⑨ The line below shows the locations of three towns on a highway.



The distance from Westfield to Springfield is 10 miles, and the distance from Westfield to Palmer is 25 miles. What is the distance, in miles, from Springfield to Palmer?

A. 15

B. 20

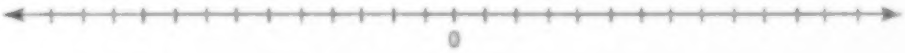
C. 30

D. 35

Reporting Category for Item 9: ***Geometry***

Session 1, Open-Response Question

Use the number line below to answer question 10.



⑩ a. Draw a number line like the one above in your Student Answer Booklet. Correctly position the following set of integers beneath the marks on your number line.

$$+10, -3, +6, +1, -9, -6$$

b. Explain why you decided where to place -3 on your number line.

c. Which number is greater: -10 or $+3$? Explain your answer.

d. Which number is greater: -3 or -6? Explain your answer.

Reporting Category for Item 10: ***Number Sense and Operations***

Session 1, Short-Answer Questions

⑪ Liam is playing a game with a deck of colored cards. The chart below shows the number of cards of each color in the deck.

Liam's Cards

Color of Cards	Number of Cards
Blue	2
Green	3
Red	5
Yellow	1
Orange	1

If Liam draws one card without looking, what is the probability he will draw a green card?

Reporting Category for Item 11: ***Data Analysis, Statistics, and Probability***

⑫ The approximate costs of running an automobile in 1994 are shown in the chart below.

Automobile Costs in 1994

Item	Amount
Gas and Oil	$750
Other	$2,250
Total Cost	$3,000

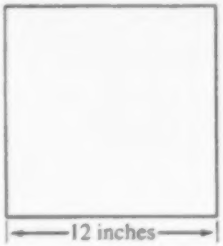
What fraction would represent the ratio of the cost of gas and oil to the total cost of running a car in 1994? Write your fraction in simplest form.

Reporting Category for Item 12: ***Number Sense and Operations***

Session 1, Open-Response Question

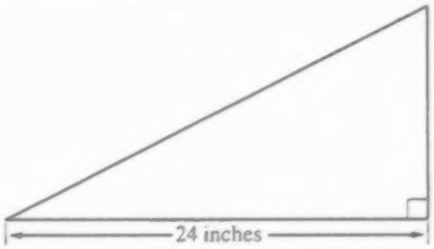
⑬ Todd, Chi, and Janet are making posters for art class. They decide that each poster will have the same area, but different dimensions.

Todd makes his poster on a square with a side that measures 12 inches.



Chi wants to make his poster on a rectangle with a width of 8 inches.

Janet will use a right triangle with a base of 24 inches.



a. What is the area of Todd's square? Show or explain your work.

b. What would the length of Chi's rectangle need to be in order for the rectangle to have the same area as Todd's square? Show or explain your work.

c. What would the height of Janet's triangle need to be in order for the triangle to have the same area as Todd's square? Show or explain your work.

Reporting Category for Item 13: ***Measurement***

Session 1, Multiple-Choice Questions

⑭ Maria charges \$5.00 to mow a lawn, plus \$6.00 per hour. Maria uses the equation $C = 5 + 6h$ to determine C, the amount of money she charges for mowing lawns. If h represents the number of hours it takes to mow a lawn, how much money will Maria charge if she mows a lawn for 3 hours?

A. \$11.00

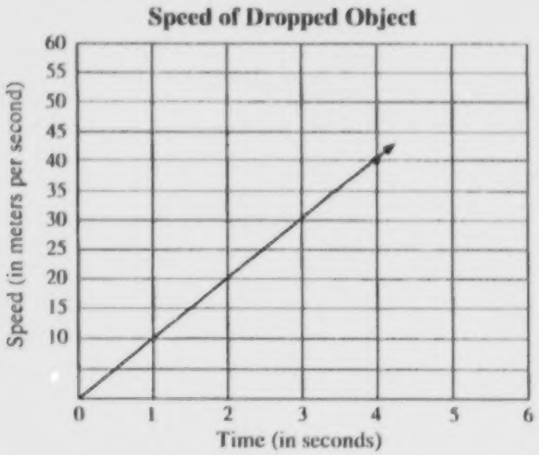
B. \$14.00

C. \$21.00

D. \$23.00

Reporting Category for Item 14: ***Patterns, Relations, and Algebra***

⑮ The graph below shows the speed of a dropped object over time.



Based on the graph, what will be the approximate speed of the dropped object after 5 seconds?

A. 5 meters per second

B. 25 meters per second

C. 50 meters per second

D. 75 meters per second

Reporting Category for Item 15: ***Patterns, Relations, and Algebra***

⑯ The table shows the temperature on four winter mornings in the Berkshire Mountains.

Winter Temperatures
in the Berkshire Mountains

Date	Temperature at 6:00 A.M.
Thursday	–9°C
Friday	–10°C
Saturday	–18°C
Sunday	–12°C

Which day had the warmest morning?

A. Thursday

B. Friday

C. Saturday

D. Sunday

Reporting Category for Item 16: ***Number Sense and Operations***

Session 1, Open-Response Question

⑰ A group of students measured their heights for a class project. The results are shown in the table below.

Students' Heights

Student	Height in Centimeters
Victor	132
Tim	142
Jackie	147
Jani	141
Bill	153
Ellen	147
Maureen	135

a. What is the mode of the students' heights?

b. Copy the stem-and-leaf plot below into your Student Answer Booklet. Correctly complete the stem-and-leaf plot by entering the remaining heights. Victor's height is already shown.

Heights (in centimeters)

15	
14	
13	2

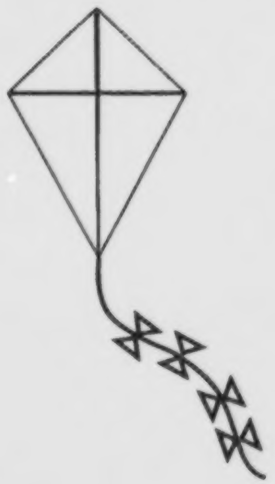
c. What is the median height of the students? Show or explain your work.

d. Later, two more students joined the group; their heights were added to the table. This did **not** change the median height of all nine students. What must have been correct about the heights of these two students? Show or explain your work.

Reporting Category for Item 17: ***Data Analysis, Statistics, and Probability***

Session 2, Multiple-Choice Questions

⑱ Lily designed the kite below for an experiment.



Which of the following correctly describes the shape of Lily's kite?

A. triangle

B. rectangle

C. parallelogram

D. quadrilateral

Reporting Category for Item 18: ***Geometry***

Use the table below to answer question 19.

x	y
5	25
10	50
12	?
17	85

⑲ According to the pattern shown, what is the value of y when x is 12?

A. 55

B. 60

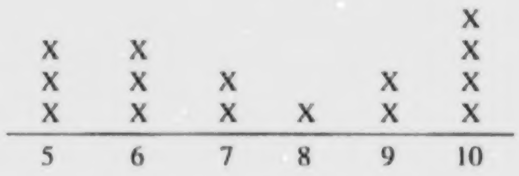
C. 75

D. 100

Reporting Category for Item 19: ***Patterns, Relations, and Algebra***

⑳ Han surveyed 15 of her classmates to find their shoe sizes. She displayed the data in the line plot below.

Shoe Sizes



What is the median shoe size?

A. 5

B. 6

C. 7

D. 10

Reporting Category for Item 20: ***Data Analysis, Statistics, and Probability***

㉑ Dolores bought a package of corn seeds. She wanted to use all the seeds in the package to plant two or more rows of corn with the same number of seeds in each row, but she found that this was **not** possible. Which of the following could have been the number of seeds in the package?

A. 32

B. 33

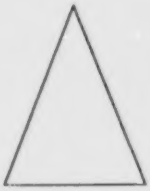
C. 35

D. 37

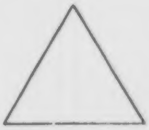
Reporting Category for Item 21: ***Number Sense and Operations***

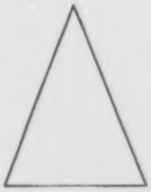
Use the ruler provided on your reference sheet to answer question 22.

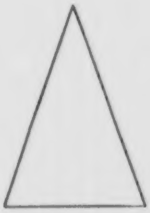
㉒ Sherrie is sewing a costume for a party. She is using the pattern shown below.

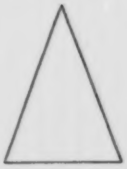


Which of the following pieces of cloth is congruent to the pattern?

A. 

B. 

C. 

D. 

Reporting Category for Item 22: ***Geometry***

㉓ Cai bought popcorn for herself and 2 friends, plus a drink only for herself. The popcorn cost \$2 for each person, and the total cost for Cai's purchase was \$7.50. If d is the cost of a drink, which equation below could be used to determine the cost of Cai's drink?

A. $2 + d = \$7.50$

B. $2 + 2d = \$7.50$

C. $3(2) + d = \$7.50$

D. $3(2) + 3d = \$7.50$

Reporting Category for Item 23: ***Patterns, Relations, and Algebra***

㉔ Sylvia and Tomás are playing a game of chess. Each player began the game with 16 pieces. Now Sylvia has $\frac{1}{4}$ of her pieces remaining on the board and Tomás has $\frac{1}{8}$ of his pieces remaining on the board. How many total pieces remain on the board?

A. 4

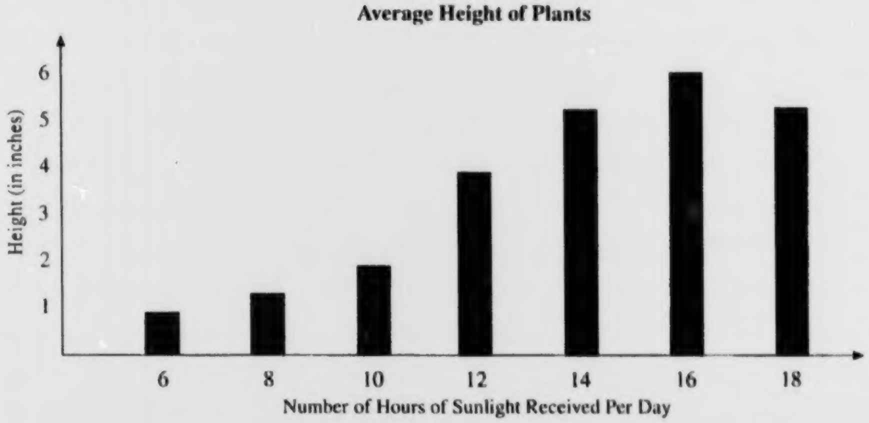
B. 6

C. 8

D. 12

Reporting Category for Item 24: ***Number Sense and Operations***

(25) The graph below shows the average height of plants based on a specific number of hours of sunlight received daily.



According to the graph, which of the following is a true statement?

A. The average height of the plants is taller with 16 hours of sunlight per day than with 14 hours of sunlight per day.

B. The average height of the plants is taller with 12 hours of sunlight per day than with 14 hours of sunlight per day.

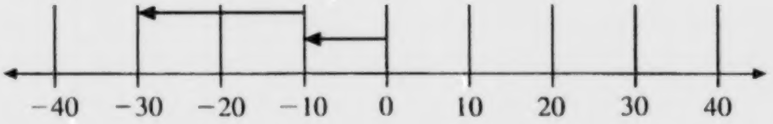
C. The average height of the plants cannot be taller than 3 inches with less than 18 hours of sunlight per day.

D. The plants grow taller as the number of hours of sunlight the plants receive increases.

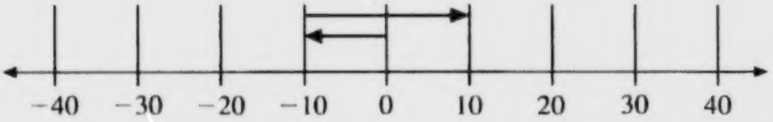
Reporting Category for Item 25: ***Patterns, Relations, and Algebra***

㉖ Which number line below **best** represents the addition problem $-10 + (-20) = \square$?

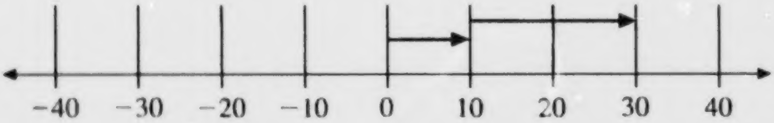
A.


−40
−30
−20
−10
0
10
20
30
40

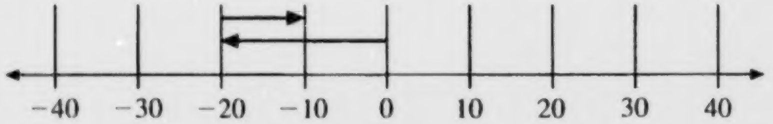
B.


−40
−30
−20
−10
0
10
20
30
40

C.


−40
−30
−20
−10
0
10
20
30
40

D.

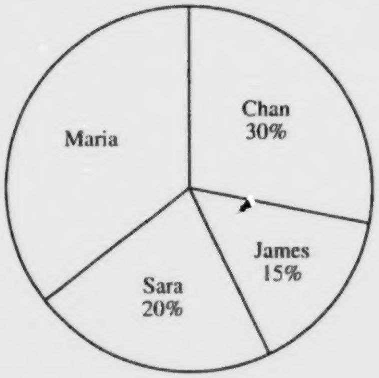

−40
−30
−20
−10
0
10
20
30
40

Reporting Category for Item 26: ***Number Sense and Operations***

Session 2, Open-Response Question

(27) Jody is making the circle graph below to show the results of the election for the sixth-grade class president. There are 520 students in the sixth grade. All 520 students voted. Each student voted for only one of four candidates.

Results of Sixth-Grade Class Election



a. What percent of the votes did Maria receive? Show or explain your work.

b. How many students voted for James? Show or explain your work.

c. How many more students voted for Chan than for Sara? Show or explain your work.

d. If the class size increases to 640, how many votes would Maria need to receive 40 percent of the votes? Show or explain your work.

Reporting Category for Item 27: ***Number Sense and Operations***

Session 2, Short-Answer Questions

㉘ What value of p makes the equation below true?

$$3p + 1 = 13$$

$3p$ means 3 times p

Reporting Category for Item 28: ***Patterns, Relations, and Algebra***

㉙ Rosa volunteered at a local nursing home for 20 days. She worked for $1\frac{1}{4}$ hours each day. How many total hours did Rosa volunteer at the nursing home?

Reporting Category for Item 29: ***Measurement***

㉚ What is the value of the following expression?

$$1 + 2 \times (3 - 1)$$

Reporting Category for Item 30: ***Number Sense and Operations***

Session 2, Open-Response Question

㉛ A booth at the State Fair is offering pony rides for children. The table below shows the relationship between the number of rides a child takes and the cost of the rides.

Pony Rides

Number	Cost
1	$2.00
2	$2.50
3	$3.00
4	$3.50
5	?
10	?

a. If the pattern continues in the same way, what is the cost for 5 rides and the cost for 10 rides?

b. Francie had $5.50 to spend. What is the **greatest** number of rides she could take? Explain how you found your answer.

c. Write an expression using *n* to show the cost of *n* rides.

Reporting Category for Item 31: ***Patterns, Relations, and Algebra***

Session 2, Multiple-Choice Questions

32 The chart below lists the times it took four students to run the 50-yard dash.

Student	Time
Pete	14.4 seconds
Sam	14.05 seconds
John	14.37 seconds
Carlos	13.9 seconds

Which shows the students in order from fastest to slowest?

A. Pete, Sam, Carlos, John

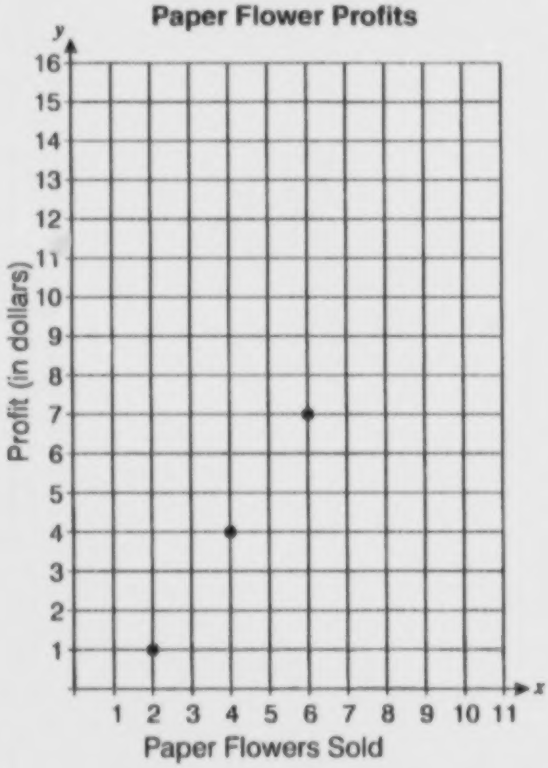
B. Carlos, John, Sam, Pete

C. Pete, Carlos, Sam, John

D. Carlos, Sam, John, Pete

Reporting Category for Item 32: ***Number Sense and Operations***

(33) A local charity group made paper flowers for a craft fair. The graph below shows their profit based on the number of flowers sold.



If the relationship shown by the graph continues, what would the profit be if the group sold 10 flowers?

A. $13

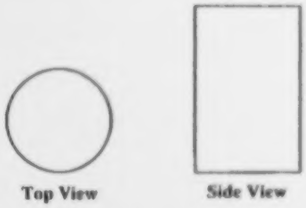
B. $14

C. $15

D. $16

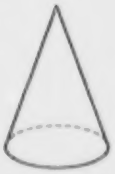
Reporting Category for Item 33: ***Patterns, Relations, and Algebra***

㉞ A new sculpture was built in a city park. The diagrams below show the top view and the side view of the sculpture.

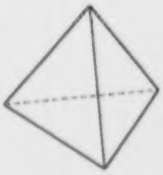


Which of the following pictures **best** shows the shape of the sculpture?

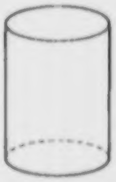
A.



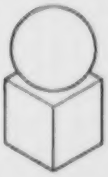
B.



C.



D.



Reporting Category for Item 34: ***Geometry***

(35) Admission to the Basketball Hall of Fame in Springfield is \$5.00 per student. A group of students bought admission tickets. One student spent an extra \$9.00 for a poster. The total amount they spent was \$34.00. How many students were in the group?

A. 4

B. 5

C. 6

D. 7

Reporting Category for Item 35: ***Patterns, Relations, and Algebra***

(36) Uri read that a bicycle tire has a radius of 30 centimeters and a diameter of 50 centimeters. How does Uri know that these measurements **cannot** be correct?

A. The radius should be twice the diameter.

B. The diameter should be twice the radius.

C. The radius should be 30π centimeters.

D. The diameter should be 50π centimeters.

Reporting Category for Item 36: ***Measurement***

(37) Shani saved three times as much money as Bill. If Bill saved d dollars, which expression shows how much money Shani saved?

A. $3d$

B. $\frac{d}{3}$

C. $d + 3$

D. $d - 3$

Reporting Category for Item 37: ***Patterns, Relations, and Algebra***

㊳ On Kenesha's last business trip she drove 820 miles. Her company pays her $0.32 per mile. Which of the following is **closest** to the amount Kenesha's company will pay her for the miles she drove?

A. $\frac{1}{4}$ of 800

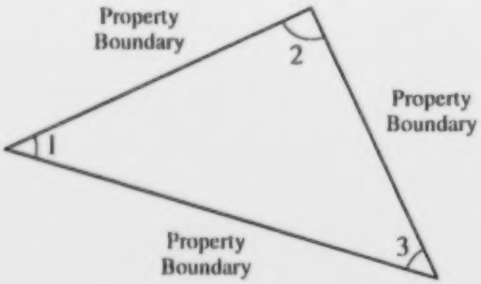
B. $\frac{1}{3}$ of 800

C. $\frac{1}{4}$ of 900

D. $\frac{1}{3}$ of 900

Reporting Category for Item 38: ***Measurement***

㊴ An architect measured the three angles marked in the diagram below.



What was the sum of the measures of the three angles?

A. 180°

B. 210°

C. 270°

D. 360°

Reporting Category for Item 39: ***Measurement***

VIII. Mathematics, Grade 8

Mathematics, Grade 8

The spring 2002 Grade 8 MCAS Mathematics test was based on the learning standards of the Massachusetts *Mathematics Curriculum Framework* (2000). The *Framework* identifies five major content strands:

- Number Sense and Operations
- Patterns, Relations, and Algebra
- Geometry
- Measurement
- Data Analysis, Statistics, and Probability

Curriculum Framework *Learning Standards* for Grades 7-8

Learning standards are grouped below by content strand and are directly quoted from the *Framework;* applicable *Framework* page numbers are shown in parentheses.

Number Sense and Operations (*Framework*, p. 62)

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Compare, order, estimate, and translate among integers, fractions and mixed numbers (e.g., rational numbers), decimals, and percents.
- Define, compare, order, and apply frequently used irrational numbers, such as $\sqrt{2}$ and π.
- Use ratios and proportions in the solution of problems; in particular, problems involving unit rates, scale factors, and rate of change.
- Represent numbers in scientific notation, and use them in calculations and problem situations.
- Apply number theory concepts, including prime factorization and relative prime numbers, to the solution of problems.
- Apply the rules of powers and roots to the solution of problems. Extend the Order of Operations to include positive integer exponents and square roots.
- Demonstrate an understanding of the properties of arithmetic operations on rational numbers. Use the associative, commutative, and distributive properties; properties of the identity and inverse elements (e.g., $-7 + 7 = 0$; $3/4 \times 4/3 = 1$); and the notion of closure of a subset of the rational numbers under an operation (e.g., the set of odd integers is closed under multiplication but not under addition).

- Use the inverse relationships of addition and subtraction, multiplication and division, and squaring and finding square roots to simplify computations and solve problems (e.g., multiplying by 1/2 or 0.5 is the same as dividing by 2).
- Estimate and compute with fractions (including simplification of fractions), integers, decimals, and percents (including those greater than 100 and less than 1).
- Determine when an estimate rather than an exact answer is appropriate and apply in problem situations.
- Select and use appropriate operations—addition, subtraction, multiplication, division, and positive integer exponents—to solve problems with rational numbers (including negatives).

Patterns, Relations, and Algebra (*Framework*, p. 63)

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Extend, represent, analyze, and generalize a variety of patterns with tables, graphs, words, and, when possible, symbolic expressions. Include arithmetic and geometric progressions (e.g., compounding).
- Evaluate simple algebraic expressions for given variable values (e.g., $3a^2 - b$ for $a = 3$ and $b = 7$).
- Demonstrate an understanding of the identity $(-x)(-y) = xy$. Use this identity to simplify algebraic expressions (e.g., $(-2)(-x + 2) = 2x - 4$).
- Create and use symbolic expressions and relate them to verbal, tabular, and graphical representations.
- Identify the slope of a line as a measure of its steepness and as a constant rate of change from its table of values, equation, or graph. Apply the concept of slope to the solution of problems.
- Identify the roles of variables with an equation (e.g., $y = mx + b$) expressing y as a function of x with parameters m and b.
- Set up and solve linear equations and inequalities with one or two variables, using algebraic methods, models, and/or graphs.
- Explain and analyze—both quantitatively and qualitatively, using pictures, graphs, charts, or equations—how a change in one variable results in a change in another variable in functional relationships (e.g., $C = \pi d$, $A = \pi r^2$ (A as a function of r), $A_{rectangle} = lw$ ($A_{rectangle}$ as a function of l and w)).
- Use linear equations to model and analyze problems involving proportional relationships. Use technology as appropriate.
- Use tables and graphs to represent and compare linear growth patterns. In particular, compare rates of change and x- and y-intercepts of different linear patterns.

Geometry (*Framework*, p. 64)

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Analyze, apply, and explain the relationship between the number of sides and the sums of the interior and exterior angle measures of polygons.
- Classify figures in terms of congruence and similarity, and apply these relationships to the solution of problems.
- Demonstrate an understanding of the relationships of angles formed by intersecting lines, including parallel lines cut by a transversal.
- Demonstrate an understanding of the Pythagorean theorem. Apply the theorem to the solution of problems.
- Use a straightedge, compass, or other tools to formulate and test conjectures, and to draw geometric figures.
- Predict the results of transformations on unmarked or coordinate planes and draw the transformed figure (e.g., predict how tessellations transform under translations, reflections, and rotations).
- Identify three-dimensional figures (e.g., prisms, pyramids) by their physical appearance, distinguishing attributes, and spatial relationships such as parallel faces.
- Recognize and draw two-dimensional representations of three-dimensional objects (e.g., nets, projections, and perspective drawings).

Measurement (*Framework*, p. 65)

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Select, convert (within the same system of measurement), and use appropriate units of measurement or scale.
- Given the formulas, convert from one system of measurement to another. Use technology as appropriate.
- Demonstrate an understanding of the concepts and apply formulas and procedures for determining measures, including those of area and perimeter/circumference of parallelograms, trapezoids, and circles. Use technology as appropriate.
- Use ratio and proportion (including scale factors) in the solution of problems, including problems involving similar plane figures and indirect measurement.
- Use models, graphs, and formulas to solve simple problems involving rates (e.g., velocity and density).

Data Analysis, Statistics, and Probability (*Framework*, p. 66)

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Describe the characteristics and limitations of a data sample. Identify different ways of selecting a sample (e.g., convenience sampling, responses to a survey, random sampling).
- Select, create, interpret, and utilize various tabular and graphical representations of data, (e.g., circle graphs, histograms, tables, and charts).
- Find, describe, and interpret appropriate measures of central tendency (mean, median, and mode) and spread (range) that represent a set of data. Use these notions to compare different sets of data.
- Use tree diagrams, tables, organized lists, basic combinatorics ("fundamental counting principle"), and area models to compute probabilities for simple compound events (e.g., multiple coin tosses or rolls of dice).

MCAS Reporting Categories

In *Test Item Analysis Reports* and on the *Subject Area Subscore* pages of the MCAS *School* and *District Reports*, Mathematics test results are reported under the following five MCAS reporting categories, which are identical to the five *Mathematics Curriculum Framework* content strands:

- Number Sense and Operations
- Patterns, Relations, and Algebra
- Geometry
- Measurement
- Data Analysis, Statistics, and Probability

MCAS Spring 2002 Common Test Items
Mathematics, Grade 8

Test Sessions

MCAS grade 8 Mathematics Student Test Booklets contained 2 separate test sessions. Each session included multiple-choice and open-response questions. Session 1 also included short-answer questions.

Reference Materials and Tools

During testing, each grade 8 student was provided with a **Mathematics Reference Sheet.** A sample of the Grade 8 Mathematics Reference Sheet is included in Appendix A of this document.

During Session 2, each grade 8 student was allowed to use a personal calculator while answering test questions. If any student could not provide his or her own calculator with at least four functions and a square root key, one was provided to that student for use during Session 2. Calculator use was not allowed during Session 1.

No other reference tools or materials were allowed during any grade 8 Mathematics test session.

Cross-Reference Information

The shaded bar underneath each item indicates the item's MCAS reporting category, which is also the name of the *Framework* content strand that contains the learning standards assessed by the item.

Session 1, Multiple-Choice Questions

① The square root of 31 is between which two whole numbers?

A. 4 and 5

B. 5 and 6

C. 6 and 7

D. 7 and 8

Reporting Category for Item 1: ***Number Sense and Operations***

② Find the next two terms in the sequence shown below.

1, 3, 7, 15, 31, ?, ?

A. 53, 117

B. 63, 127

C. 73, 137

D. 83, 147

Reporting Category for Item 2: ***Patterns, Relations, and Algebra***

③ The regular price of a CD player is $74. It is on sale for 20% off. Which of the following is **closest** to the sale price?

A. $40

B. $50

C. $60

D. $70

Reporting Category for Item 3: ***Number Sense and Operations***

④ For which of the following would a yard be the **most** appropriate unit of measure?

A. the area of a street sign

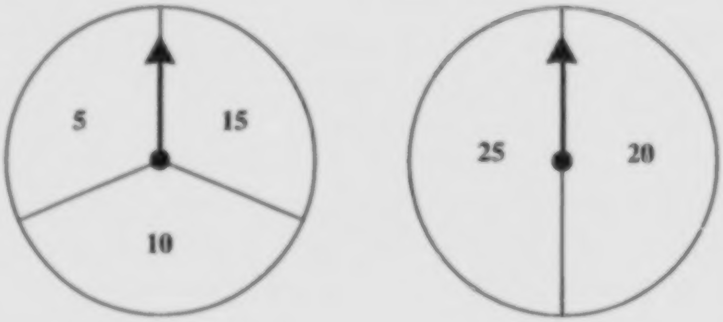
B. the volume of a bus

C. the length of a cafeteria table

D. the distance from Boston to Springfield, Massachusetts

Reporting Category for Item 4: ***Measurement***

⑤ May Ling has two spinners, as shown below. She will spin each arrow once and add the results.



Which of the following sets represents every possible outcome?

A. {25, 30, 35, 40}

B. {15, 20, 25, 30, 35, 40}

C. {20, 25, 30, 35, 40, 45}

D. {10, 15, 20, 25, 30, 35, 40, 45, 50}

Reporting Category for Item 5: ***Data Analysis, Statistics, and Probability***

⑥ The rates that Zack charges for baby-sitting are as follows:

- $2.50 per hour for the first child and
- an extra 75¢ per hour for each additional child.

Which chart below shows Zack's hourly charges for baby-sitting one, two, and three children?

A.

Number of children	Hourly charges
1	$2.50
2	$3.25
3	$3.25

B.

Number of children	Hourly charges
1	$3.25
2	$4.00
3	$4.75

C.

Number of children	Hourly charges
1	$2.50
2	$3.25
3	$4.00

D.

Number of children	Hourly charges
1	$3.25
2	$4.00
3	$4.00

Reporting Category for Item 6: ***Patterns, Relations, and Algebra***

Session 1, Short-Answer Questions

⑦ Natalie bought a book that was on sale for 25% off. The regular price of the book was $18. What was the sale price of the book?

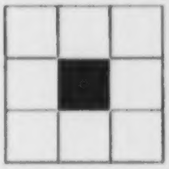
Reporting Category for Item 7: ***Number Sense and Operations***

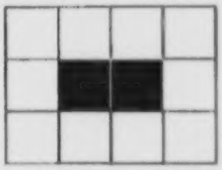
⑧ There are yellow, pink, and purple balloons in a package. If Benjamin takes 1 balloon without looking, the probability that it will be yellow is $\frac{1}{2}$. The probability that it will be pink is $\frac{1}{3}$. The probability that it will be purple is $\frac{1}{6}$. What is the **least** number of balloons that could be in the package?

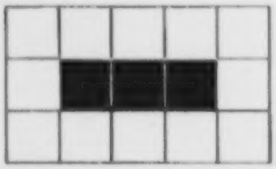
Reporting Category for Item 8: ***Data Analysis, Statistics, and Probability***

Session 1, Open-Response Question

⑨ A worker placed white tiles around black tiles in the pattern shown in the three figures below.







a. Based on this pattern, how many white tiles would be needed for 4 black tiles?

b. Based on this pattern, how many white tiles would be needed for 50 black tiles?

c. Make a scatterplot of the first five figures in this pattern showing the relationship between the number of white tiles and the number of black tiles. Be sure to label the axes.

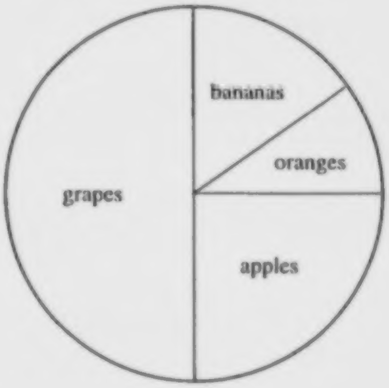
d. Based on this pattern, explain how you could find the number of white tiles needed for any number, *n*, of black tiles. Show or explain your work.

Reporting Category for Item 9: ***Patterns, Relations, and Algebra***

Session 1, Multiple-Choice Questions

⑩ Marty surveyed 24 students and asked them to name their favorite fruit. The circle graph below shows the results of his survey.

Students' Favorite Fruits



Which fruit was the favorite of **exactly** 6 of the students?

A. apples

B. oranges

C. bananas

D. grapes

Reporting Category for Item 10: ***Data Analysis, Statistics, and Probability***

⑪ Huey is reading a book that is 697 pages long. He tells a friend that he is about $\frac{3}{4}$ of the way done. About how many more pages must Huey read before he finishes the book?

A. 150 pages

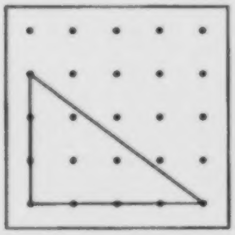
B. 160 pages

C. 175 pages

D. 250 pages

Reporting Category for Item 11: ***Number Sense and Operations***

⑫ On the grid below, the distance between each dot is 1 inch.



What is the length, in inches, of the hypotenuse of the right triangle?

A. 4

B. 4.5

C. 5

D. 5.5

Reporting Category for Item 12: ***Geometry***

Mathematics, Grade 8

⑬ Marisa saved \$500 to spend on a vacation. She will spend about \$45 per day on her vacation, and she must have \$70 left to pay for her bus ride home. Which of the following inequalities **best** represents the possible numbers of days, *d*, Marisa could be on vacation?

A. $\$500 - (\$45\,d) \geq \$70$

B. $\$500 - (\$45\,d) \leq \$70$

C. $\$500 - (\$70\,d) \geq \$45$

D. $\$500 - (\$70\,d) \leq \$45$

Reporting Category for Item 13: ***Patterns, Relations, and Algebra***

⑭ What is the value of $-2[x - 2(x - y)]$ when $x = -3$ and $y = 7$?

A. -100

B. -34

C. 34

D. 27

Reporting Category for Item 14: ***Patterns, Relations, and Algebra***

⑮ A bag contains 3 blue, 4 red, and 2 white marbles. Karin is going to draw out a marble without looking in the bag. What is the probability that she will **not** draw a red marble?

A. $\frac{1}{3}$

B. $\frac{5}{9}$

C. $\frac{2}{3}$

D. $\frac{4}{9}$

Reporting Category for Item 15: ***Data Analysis, Statistics, and Probability***

⑯ Compute:

$$10 - (3)^2 + (-3) \times 2$$

A. -5

B. 4

C. -2

D. 2

Reporting Category for Item 16: ***Number Sense and Operations***

⑰ Latoya and Keith dropped a ball from various heights and measured the height of the first bounce. They recorded their data in the chart below.

Height from which ball was dropped (d)	40 in.	60 in.	50 in.	20 in.
Height of first bounce (b)	19 in.	30 in.	27 in.	11 in.

Which equation **best** shows the relationship between the height from which the ball was dropped and the height of the ball's first bounce?

A. $b = d - 20$

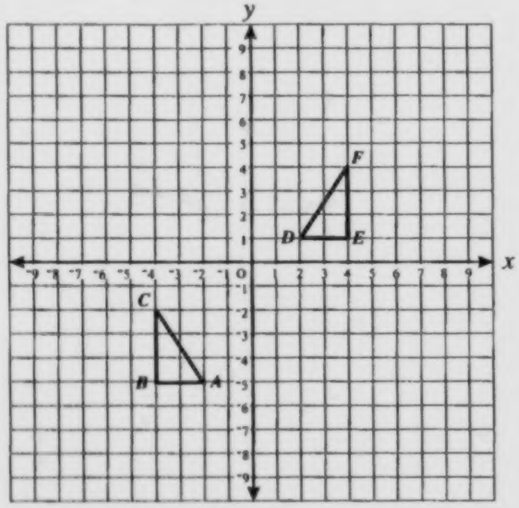
B. $b = 2d$

C. $b = d + 20$

D. $b = \frac{1}{2}d$

Reporting Category for Item 17: ***Patterns, Relations, and Algebra***

⑱ $\triangle ABC$ and $\triangle DEF$ are shown on the grid below.



Which of the following transformations will map $\triangle ABC$ onto $\triangle DEF$?

A. Reflect $\triangle ABC$ over the y-axis and shift up 6 spaces.

B. Reflect $\triangle ABC$ over the x-axis and shift up 6 spaces.

C. Reflect $\triangle ABC$ over the y-axis and shift down 6 spaces.

D. Reflect $\triangle ABC$ over the y-axis, reflect over the x-axis, and shift down 4 spaces.

Reporting Category for Item 18: ***Geometry***

Session 1, Short-Answer Questions

⑲ What is the ratio of the circumference of a circle to its diameter?

Reporting Category for Item 19: ***Number Sense and Operations***

⑳ Let x be a positive, even number that is **less than** 10. Write one ordered pair (x, y) that would make the equation $y = x + 3$ true.

Reporting Category for Item 20: ***Patterns, Relations, and Algebra***

㉑ The Eliot School plans to have the school library carpeted. The room is in the shape of a rectangle and measures 24 feet by 18 feet. If the carpet costs $25.75 per square yard including installation, how much will it cost to have the library carpeted?

Reporting Category for Item 21: ***Measurement***

Session 1, Open-Response Question

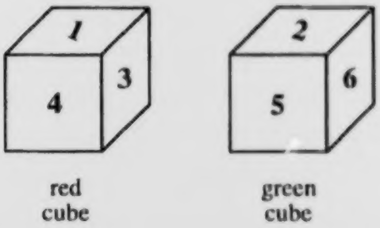
㉒ Lionel and Tracy are playing a game using two six-sided number cubes. The faces of each cube are numbered as shown below.

1 2 3 4 5 6

Lionel has a red cube and Tracy has a green cube. To play the game they both roll their cubes at the same time.

- The numbers that show face up when the cubes stop rolling are used to make a fraction.
- The number on the red cube is used for the numerator and the number on the green cube is used for the denominator.

For example, the results shown below would make the fraction $\frac{1}{2}$.



- Lionel wins 1 point if the fraction formed has a value less than one.
- Tracy wins 1 point if the fraction has a value greater than one.
- No one gets a point if the fraction is equal to one.

a. Make a list or a table in your Student Answer Booklet of all of the fractions possible from rolling 1 red and 1 green cube. How many total different fractions are there?

b. If Lionel (red cube) rolls a 3, what is the probability that Tracy (green cube) wins 1 point? Show your work or explain how you obtained your answer.

c. Using your table, what is the probability of each player winning a point on a given turn? Do you think this game is fair to both players? Show your work or explain how you obtained your answer.

Reporting Category for Item 22: ***Data Analysis, Statistics, and Probability***

Session 2, Multiple-Choice Questions

㉓ The table below shows the annual salaries of employees of a company based on years of employment.

Annual Salary

Years of Employment	Annual Salary
Starting Salary	$30,000
1	$31,500
2	$33,000
3	$34,500
4	$36,000

Based on the data in the table, what is the annual salary of an employee who has just completed 10 years of service with this company?

A. $46,500

B. $45,000

C. $43,500

D. $40,000

Reporting Category for Item 23: ***Patterns, Relations, and Algebra***

(24) Which of the following fractions is equivalent to 0.2×0.6?

A. $\frac{3}{25}$

B. $\frac{12}{25}$

C. $\frac{3}{5}$

D. $\frac{6}{5}$

Reporting Category for Item 24: ***Number Sense and Operations***

(25) Mr. Gonzales is planning to drive 135 miles from West Stockbridge to Boston on the Mass Pike. He estimates that he will average 55 miles per hour. What is the latest time he can leave West Stockbridge to arrive in Boston at 11:00 A.M.?

A. 9:30 A.M.

B. 8:30 A.M.

C. 7:30 A.M.

D. 6:30 A.M.

Reporting Category for Item 25: ***Measurement***

(26) Ms. Jordan bought a box of 32 granola bars. Every day each of her three children ate one granola bar for lunch. Now there are only 11 bars left. Which equation can be used to find the number of days, n, that the children ate the bars for lunch?

A. $32 = \frac{n}{3} - 11$

B. $32 = 3n - 11$

C. $32 = \frac{n}{3} + 11$

D. $32 = 3n + 11$

Reporting Category for Item 26: ***Patterns, Relations, and Algebra***

Use the equation below to answer question 27.

$$-3xy = 45$$

(27) Which of the following statements is true?

A. Only x is negative.

B. Only y is negative.

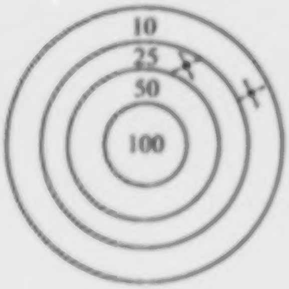
C. Both x and y are negative.

D. Either x or y is negative.

Reporting Category for Item 27: ***Number Sense and Operations***

Session 2, Open-Response Questions

28 Esther shot two arrows at a target. The picture below shows where the arrows landed.



Esther calculated her score by adding the number of points for each ring in which an arrow landed. For the two arrows above, her score was 35 points (25 + 10).

a. In your Student Answer Booklet, make a list of all the possible scores Esther could have gotten by shooting two arrows that hit the target.

b. Is it possible for Esther to score a total of 235 points using **only** 5 arrows? Show your work or explain your answer.

c. What is the **fewest** number of arrows required for Esther to score a total of 240 points? Show your work or explain your answer.

Reporting Category for Item 28: ***Number Sense and Operations***

㉙ Molly formed three polygons—a triangle, a rectangle, and a pentagon—with string. She calculated the sum of the measures of the interior angles for each polygon and entered her data in the chart shown below.

Type of Polygons	**Number of Sides**	**Sum of the Measures of the Interior Angles**
Triangle	3	180°
Rectangle	4	360°
Pentagon	5	540°
Hexagon	6	?
Octagon	8	?
Unnamed Polygon	?	2340°
n-sided Polygon	*n*	?

a. What is the sum of the measures of the interior angles of a hexagon?

b. What is the sum of the measures of the interior angles of an octagon?

c. How many sides does an unnamed polygon have if the sum of the measures of the interior angles is 2340°?

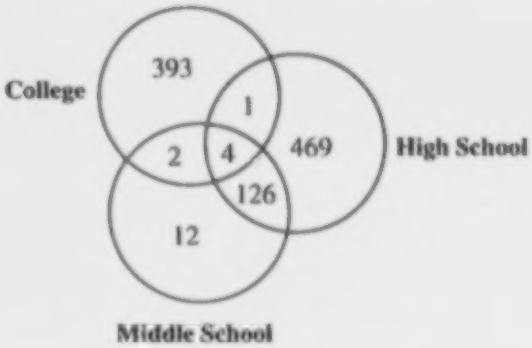
d. Explain how you would find the sum of the measures of the interior angles of an *n*-sided polygon.

Reporting Category for Item 29: ***Geometry***

Session 2, Multiple-Choice Questions

(30) The Venn diagram below shows Leila's graduating classes from middle school, high school, and college.

Leila's Graduating Classes


393
College
1
2
4
469
High School
126
12
Middle School

How many students graduated together from **both** Leila's middle school and high school?

A. 133

B. 132

C. 131

D. 130

Reporting Category for Item 30: ***Data Analysis, Statistics, and Probability***

(31) The chart shows the area of the eight largest counties in Massachusetts.

Area of Selected Massachusetts Counties

Selected Counties in Massachusetts	Area (square miles)
Berkshire	931
Bristol	556
Franklin	702
Hampden	618
Hampshire	529
Middlesex	824
Plymouth	661
Worcester	1513

What is the median area, to the nearest square mile, of the 8 largest counties in Massachusetts?

A. 661 square miles

B. 682 square miles

C. 702 square miles

D. 792 square miles

Reporting Category for Item 31: ***Data Analysis, Statistics, and Probability***

(32) What value of x makes the equation below true?

$$3x + 2(x - 5) = 50$$

A. 8

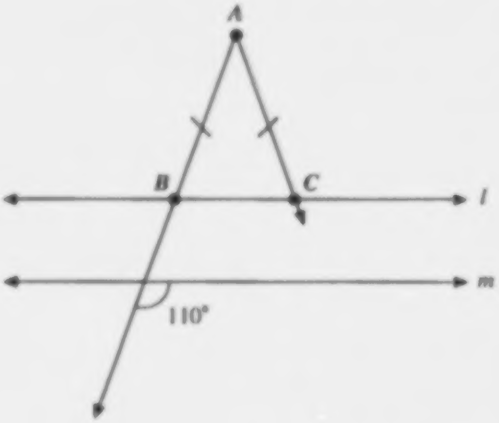
B. 9

C. 11

D. 12

Reporting Category for Item 32: **Patterns, Relations, and Algebra**

Use the figure below to answer question 33.



(33) In the figure shown above, lines l and m are parallel, and $\triangle ABC$ is isosceles. What is the measure of $\angle ABC$?

A. 40°

B. 50°

C. 60°

D. 70°

Reporting Category for Item 33: **Geometry**

㉞ Which equation states a rule for the pattern shown in the table below?

Input (x)	1	2	3	4
Output (y)	1	5	11	19

A. $y = x^2 - x + 1$
B. $y = x^2 + x - 1$
C. $y = x^2 + 3$
D. $y = x^2 + 1$

Reporting Category for Item 34: ***Patterns, Relations, and Algebra***

㉟ In the equation shown below, x represents a positive real number.

$$y = \frac{100}{x} + 50$$

As the value of x gets larger, what happens to the value of y?

A. The value of y stays the same.
B. The value of y increases.
C. The value of y approaches 50.
D. The value of y approaches 100.

Reporting Category for Item 35: ***Patterns, Relations, and Algebra***

㊱ Which is equivalent to $p \div \frac{1}{10}$?

A. $10p$
B. $0.1p$
C. $\frac{p}{10}$
D. $0.01p$

Reporting Category for Item 36: ***Number Sense and Operations***

(37) The chart below shows the amount spent by customers at a department store on a typical business day.

Amount Spent	Number of Customers
$0	158
$0.01 - $5.99	94
$6.00 - $9.99	203
$10.00 - $19.99	126
$20.00 - $49.99	47
$50.00 - $99.99	38
$100 and over	53

Based on the information in the chart, which of the following is closest to the probability that a customer entering the store on a typical day will spend **at least** $10?

A. 13%

B. 18%

C. 37%

D. 81%

Reporting Category for Item 37: ***Data Analysis, Statistics, and Probability***

(38) The computer game Peter wants to buy will cost at least $50 and not more than $70. He earns $3 an hour running errands for his grandmother. Which inequality shows the number of hours, n, he will have to work to pay for the game?

A. $3n \geq 20$

B. $\frac{n}{3} \geq 20$

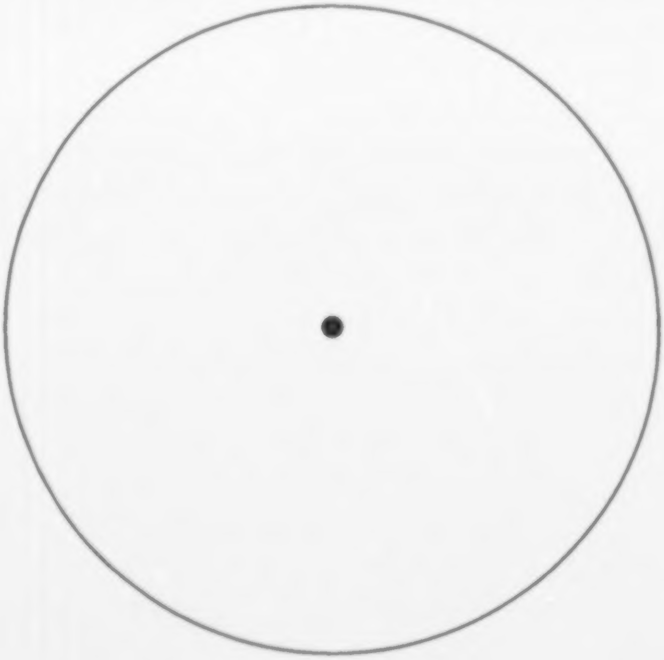
C. $50 \leq 3n \leq 70$

D. $50 \leq \frac{n}{3} \leq 70$

Reporting Category for Item 38: ***Patterns, Relations, and Algebra***

Session 2, Open-Response Question

Use the ruler included in your reference sheet to answer question 39.



㊴ The figure shown above represents the base of a cylindrical tank. The tank has a height of 16 centimeters (1 milliliter = 1 cubic centimeter).

a. What is the radius of the base, in centimeters?

b. What is the volume of the cylinder in milliliters? Show your work.

c. If both the radius and the height of the cylinder were doubled, what would be the volume of the cylinder in milliliters? Show your work.

d. Based on your answers to parts b and c, what is the ratio of the volume of the smaller tank to the volume of the larger tank? Show your work.

Reporting Category for Item 39: ***Measurement***

IX. Mathematics, Grade 10

Mathematics, Grade 10

The spring 2002 Grade 10 MCAS Mathematics test was based on the learning standards of the Massachusetts *Mathematics Curriculum Framework* (2000). The *Framework* identifies five major content strands:

- Number Sense and Operations
- Patterns, Relations, and Algebra
- Geometry
- Measurement
- Data Analysis, Statistics, and Probability

Curriculum Framework *Learning Standards* for Grades 9-10

Learning standards are grouped below by content strand and are directly quoted from the *Framework*; applicable *Framework* page numbers are shown in parentheses.

Number Sense and Operations (*Framework*, p. 72)

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Identify and use the properties of operations on real numbers, including the associative, commutative, and distributive properties; the existence of the identity and inverse elements for addition and multiplication; the existence of n^{th} roots of positive real numbers for any positive integer n; and the inverse relationship between taking the n^{th} root of and the n^{th} power of a positive real number.
- Simplify numerical expressions, including those involving positive integer exponents; apply such simplifications in the solution of problems.
- Use estimation to judge the reasonableness of results of computations and of solutions to problems involving real numbers.

242

Patterns, Relations, and Algebra (*Framework*, pp. 72-73)

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Describe, complete, extend, analyze, generalize, and create a wide variety of patterns, including iterative, recursive (e.g., Fibonacci Numbers, linear, quadratic, and exponential functional relationships).
- Demonstrate an understanding of the relationship between various representations of a line. Determine a line's slope and x- and y-intercepts from its graph or from a linear equation that represents the line. Find a linear equation describing a line from a graph or a geometric description of the line (e.g., by using the "point-slope" or "slope y-intercept" formulas). Explain the significance of a positive, negative, zero, or undefined slope.
- Add, subtract, and multiply polynomials.
- Demonstrate facility in symbolic manipulation of polynomial and rational expressions by rearranging and collecting terms; factoring (e.g., $a^2 - b^2 = (a + b)(a - b)$, $x^2 + 10x + 21 = (x + 3)(x + 7)$, $5x^4 + 10x^3 - 5x^2 = 5x^2(x^2 + 2x - 1)$); identifying and canceling common factors in rational expressions; and applying the properties of positive integer exponents.
- Find solutions to quadratic equations (with real roots) by factoring.
- Solve equations and inequalities and apply to the solution of problems.
- Solve everyday problems that can be modeled using linear, reciprocal, quadratic, or exponential functions. Apply appropriate tabular, graphical, or symbolic methods to the solution. Include compound interest, and direct and inverse variation problems. Use technology when appropriate.
- Solve everyday problems that can be modeled using systems of linear equations or inequalities. Apply algebraic and graphical methods to the solution. Use technology when appropriate. Include mixture, rate, and work problems.

Geometry (*Framework*, pp. 73-74)

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Identify figures using properties of sides, angles, and diagonals. Identify the figures' type(s) of symmetry.
- Draw congruent and similar figures using a compass, straightedge, protractor, and other tools such as computer software. Make conjectures about methods of construction. Justify the conjectures by logical arguments. Recognize and solve problems involving angles formed by transversals of coplanar lines.
- Identify and determine the measure of central and inscribed angles and their associated minor and major arcs. Recognize and solve problems associated with radii, chords, and arcs within or on the same circle.
- Apply congruence and similarity correspondences (e.g., $\Delta ABC \cong \Delta XYZ$) and properties of the figures to find missing parts of geometric figures, and provide logical justification.
- Solve simple triangle problems using the triangle angle sum property and/or the Pythagorean theorem.
- Use the properties of special triangles (e.g., isosceles, equilateral, $30^\circ - 60^\circ - 90^\circ$, $45^\circ - 45^\circ - 90^\circ$) to solve problems.
- Use rectangular coordinates, calculate midpoints of segments, slopes of lines and segments, and distances between two points, and apply the results to the solutions of problems.
- Find linear equations that represent lines either perpendicular or parallel to a given line and through a point (e.g., by using the "point-slope" form of the equation).
- Draw the results, and interpret transformations on figures in the coordinate plane (e.g., translations, reflections, rotations, scale factors, and the results of successive transformations). Apply transformations to the solutions of problems.
- Demonstrate the ability to visualize solid objects and recognize their projections and cross sections.
- Use vertex-edge graphs to model and solve problems.

Measurement (*Framework*, pp. 74-75)

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Calculate perimeter, circumference, and area of common geometric figures such as parallelograms, trapezoids, circles, and triangles.
- Given the formula, find the lateral area, surface area, and volume of prisms, pyramids, cylinders, and cones.
- Relate changes in the measurement of one attribute of an object to changes in other attributes (e.g., how changing the radius or height of a cylinder affects its surface area or volume).

Data Analysis, Statistics, and Probability (*Framework*, p. 75)

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Select, create, and interpret an appropriate graphical representation (e.g., scatterplot, table, stem-and-leaf plots, box-and-whisker plots, circle graph, line graph, and line plot) for a set of data and use appropriate statistics (e.g., mean, median, range, and mode) to communicate information about the data. Use these notions to compare different sets of data.
- Approximate a line of best fit (trend line) given a set of data (e.g., scatterplot). Use technology when appropriate.
- Describe and explain how the relative sizes of a sample and the population affect the validity of predictions from a set of data.

MCAS Reporting Categories

In *Test Item Analysis Reports* and on the *Subject Area Subscore* pages of the MCAS *School* and *District Reports,* Mathematics test results are reported under the following five MCAS reporting categories, which are identical to the five *Mathematics Curriculum Framework* content strands:

- Number Sense and Operations
- Patterns, Relations, and Algebra
- Geometry
- Measurement
- Data Analysis, Statistics, and Probability

MCAS Spring 2002 Common Test Items
Mathematics, Grade 10
Standard Test and Retest

Test Sessions

MCAS grade 10 Mathematics Student Test Booklets contained 2 separate test sessions. Each session included multiple-choice and open-response questions. Session 1 also included short-answer questions.

Reference Materials and Tools

During testing, each grade 10 student was provided with a **Mathematics Reference Sheet**. A sample of the Grade 10 Mathematics Reference Sheet is included in Appendix A of this document.

During Session 2, each grade 10 student was allowed to use a personal calculator while answering test questions. If any student could not provide his or her own calculator with at least four functions and a square root key, one was provided to that student for use during Session 2. Calculator use was not allowed during Session 1.

No other reference tools or materials were allowed during any grade 10 Mathematics test session.

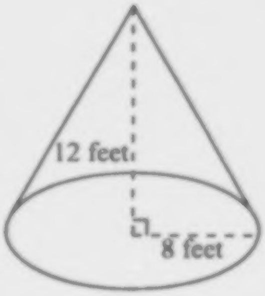
Cross-Reference Information

The shaded bar underneath each item indicates the item's MCAS reporting category, which is also the name of the *Framework* content strand that contains the learning standards assessed by the item.

247

Session 1, Multiple-Choice Questions

① The cone shown below has a radius of 8 feet and a height of 12 feet.



What is the volume of the cone?

A. 32π cubic feet

B. 256π cubic feet

C. 374π cubic feet

D. 768π cubic feet

Reporting Category for Item 1: ***Measurement***

② Darlene went to the hardware store to purchase 581 feet of rope. The rope costs $0.61 per yard. Which is **closest** to the amount of money Darlene needs to purchase the rope?

A. $100.00

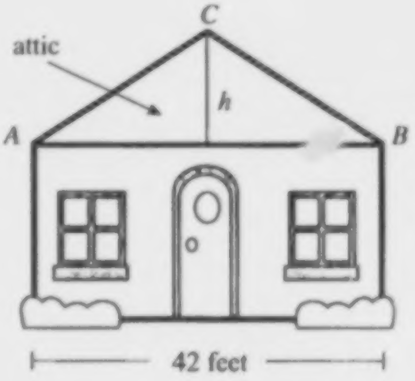
B. $120.00

C. $360.00

D. $1080.00

Reporting Category for Item 2: ***Number Sense and Operations***

③ The figure below shows a house with an attic, represented by ΔABC with $AC = BC$. The distance from A to B is 42 feet. The slope (commonly referred to as the pitch) of the roof is $\frac{2}{3}$.



What is the height, h, of the attic?

A. 14 feet

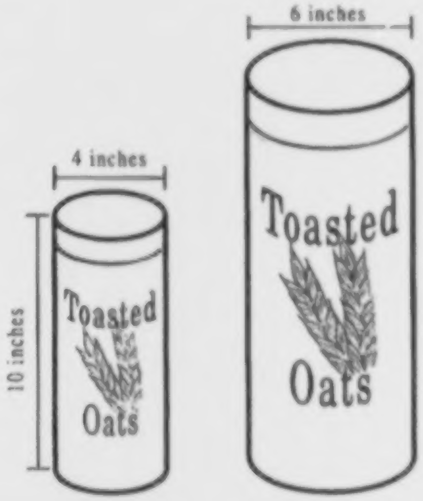
B. 28 feet

C. 32 feet

D. 63 feet

Reporting Category for Item 3: ***Number Sense and Operations***

④ A company packages breakfast cereal in the two sizes of right cylindrical containers shown below. The containers are similar in shape.


6 inches
4 inches
10 inches
Toasted Oats
Toasted Oats

How many cubic inches does the large container hold?

A. 90π cubic inches

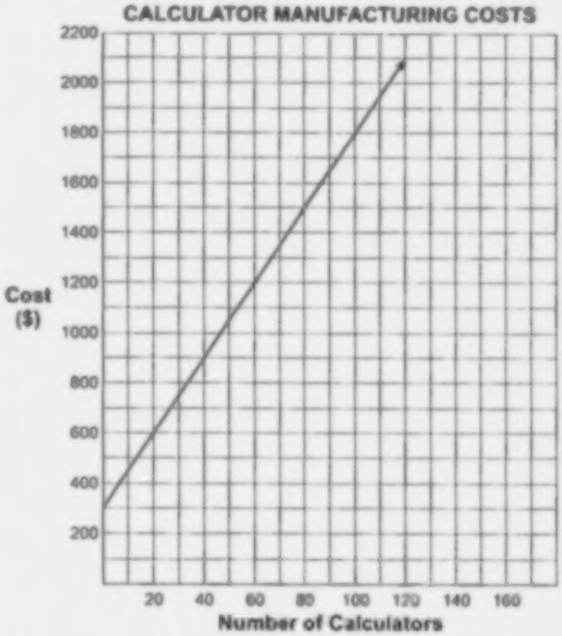
B. 135π cubic inches

C. 360π cubic inches

D. 540π cubic inches

Reporting Category for Item 4: ***Measurement***

⑤ The graph below models the cost of manufacturing calculators.



Which equation shows the relationship between the number of calculators, n, and the total cost, C?

A. $C = 300 + n$

B. $C = 300 + 0.08n$

C. $C = 300 + 12.5n$

D. $C = 300 + 15n$

Reporting Category for Item 5: ***Patterns, Relations, and Algebra***

⑥ Lani had a box that contained

- 1 blue marble;
- 1 green marble;
- 1 purple marble;
- 1 yellow marble; and
- 2 red marbles.

Lani removed one marble without looking, and she recorded the result. She placed the marble back in the box and repeated the procedure one more time. What is the probability that Lani removed a red marble followed by a blue marble?

A. $\frac{1}{36}$

B. $\frac{1}{18}$

C. $\frac{1}{3}$

D. $\frac{1}{2}$

Reporting Category for Item 6: ***Data Analysis, Statistics, and Probability***

⑦ What is the value of the expression $3|2 - 4| - 7$?

A. -13

B. -1

C. 1

D. 13

Reporting Category for Item 7: ***Number Sense and Operations***

Mathematics, Grade 10

⑧ Computers are designed around off/on switches that are used to represent numbers. In the following pattern, which represents the numbers from 0 to 10, ○ represents a switch that is on and ● represents a switch that is off.

● ● ● ● =0
● ● ● ○ =1
● ● ○ ● =2
● ● ○ ○ =3
● ○ ● ● =4
● ○ ● ○ =5
● ○ ○ ● =6
● ○ ○ ○ =7
○ ● ● ● =8
○ ● ● ○ =9
○ ● ○ ● =10

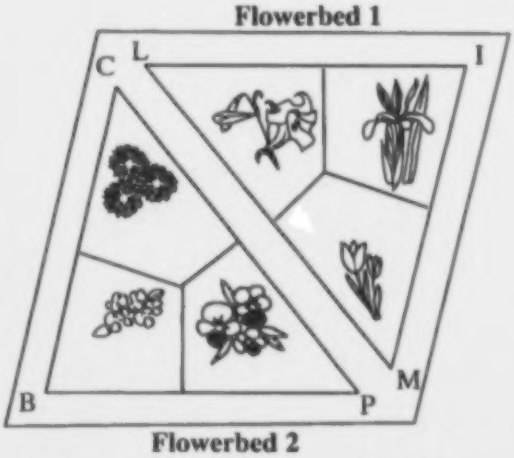
Which of the following represents the number 11?

A. ○ ○ ○ ●
B. ○ ○ ● ●
C. ○ ● ○ ○
D. ○ ○ ○ ○

Reporting Category for Item 8: ***Patterns, Relations, and Algebra***

⑨ A landscape artist is designing two triangular flowerbeds so that:

- $\triangle LIM \cong \triangle PBC$.
- $\triangle LIM$ encloses Flowerbed 1.
- $\triangle PBC$ encloses Flowerbed 2.
- The measure of $\angle C$ is 50° and the measure of $\angle B$ is 75°.



What is the measure of $\angle L$?

A. 50°

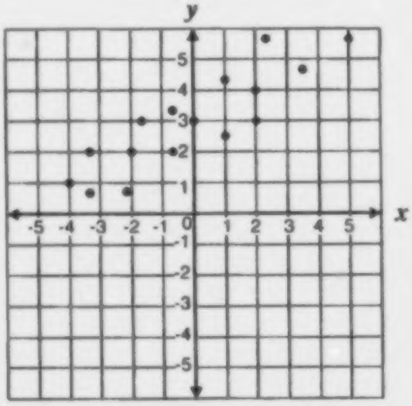
B. 55°

C. 75°

D. 105°

Reporting Category for Item 9: ***Geometry***

Use the graph below to answer question 10.



⑩ Which of the following equations **best** represents the data in the graph?

A. $y = 2x + 3$

B. $y = \frac{1}{2}x + 3$

C. $y = 2x - 3$

D. $y = \frac{1}{2}x - 3$

Reporting Category for Item 10: ***Data Analysis, Statistics, and Probability***

⑪ Which of the following equations **does not** represent a linear relationship?

A. $xy = 12$

B. $x + y = 12$

C. $y = 12x$

D. $x - y = 12$

Reporting Category for Item 11: ***Patterns, Relations, and Algebra***

⑫ Solve the inequality $|x - 7| \leq 8$ for x.

A. $0 \leq x \leq 15$

B. $-1 \leq x \leq 15$

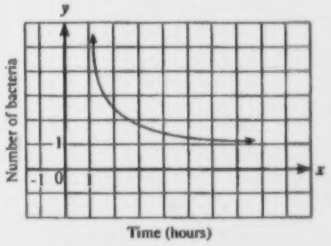
C. $-1 \leq x \leq 16$

D. $-7 \leq x \leq 8$

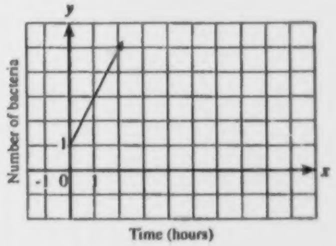
Reporting Category for Item 12: ***Patterns, Relations, and Algebra***

⑬ The number of bacteria in a culture doubles each hour. Which graph below **best** represents this situation?

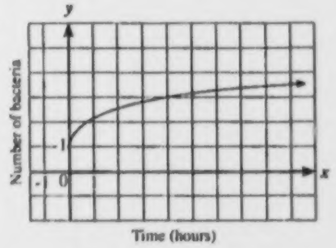
A.



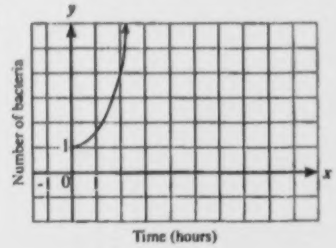
B.



C.



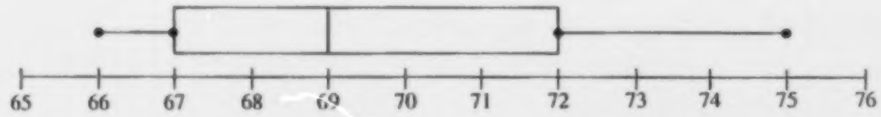
D.



Reporting Category for Item 13: ***Patterns, Relations, and Algebra***

⑭ The heights of the 20 players on a school soccer team are recorded in the box-and-whisker plot shown below.

Players' Heights in Inches



Based on the information given in the box-and-whisker plot, which of the following statements is true?

A. The mean height of the team is 69 inches.

B. Half the players' heights are between 67 and 72 inches.

C. The shortest player on the team is 67 inches.

D. The range of heights of players on the team is 5 inches.

Reporting Category for Item 14: ***Data Analysis, Statistics, and Probability***

Session 1, Short-Answer Questions

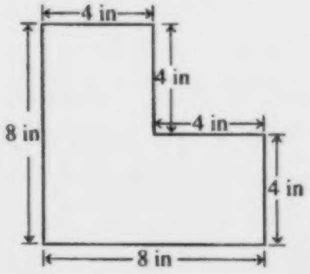
⑮ Solve the following equation for *x*.

$$3x - (2x - 3) = 2x + 9$$

Reporting Category for Item 15: ***Patterns, Relations, and Algebra***

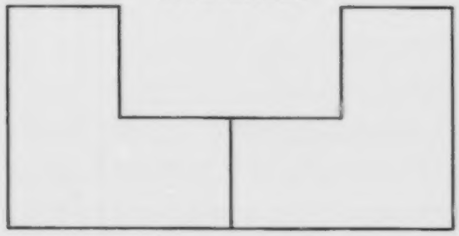
⑯ Geoffrey is building a patio. The floor of his patio will be made of bricks. The diagram below shows the shape of each brick.

One Brick



Geoffrey can combine two bricks side-by-side to make different shapes. An example of one combination of two bricks is shown below.

Two Bricks



What combination of two bricks would have the **smallest** base perimeter? Draw this combination in your Student Answer Booklet.

Reporting Category for Item 16: ***Measurement***

Session 1, Open-Response Question

⑰ Casey placed six identical cards in a box. Each card was marked with one integer using each of the integers 0, 1, 2, 3, 4, and 5 once. Casey drew two cards at random, one at a time, without replacing the first card.

a. Make a list, chart, or diagram of the possible outcomes when choosing two cards in this manner.

b. What is the probability that the sum of the integers on the two cards is greater than 9?

c. Based on your response to part a., what is the most frequently occurring sum of the integers? What is the probability that this sum will occur?

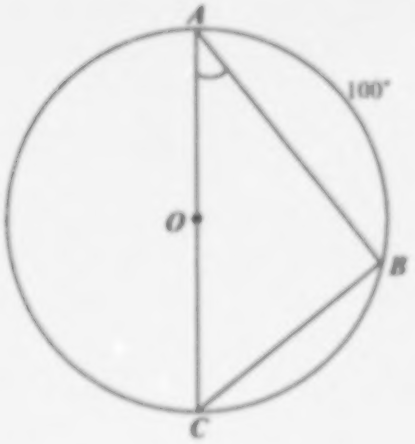
Reporting Category for Item 17: ***Data Analysis, Statistics, and Probability***

Session 1, Short-Answer Questions

⑱ What is the simplest form of the expression $\frac{2x^4y^2}{x^2y^2}$, $x \neq 0$, $y \neq 0$?

Reporting Category for Item 18: **Patterns, Relations, and Algebra**

Use the figure below to answer question 19.



⑲ Triangle *ABC* is inscribed in a circle *O*. What is the measure of $\angle A$?

Reporting Category for Item 19: **Geometry**

Session 1, Open-Response Questions

⑳ Theresa took a test that had a total of 50 questions. There were 20 open-response questions and 30 short-answer questions on the test.

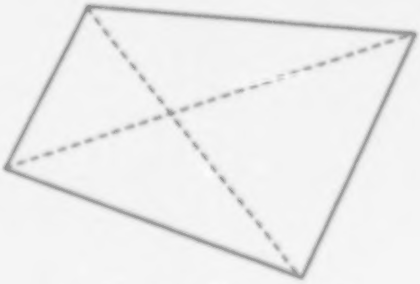
a. There was a total of 100 points on the test; each question on the test was worth the same number of points. How many points was each question worth? Show your work or explain how you obtained your answer.

b. Suppose that 90% was the minimum score required in order to earn an A on this test. How many questions could Theresa answer incorrectly and still earn an A? Show your work or explain how you obtained your answer.

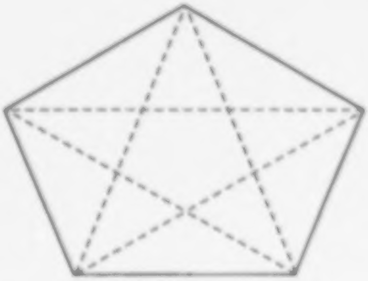
c. If Theresa answered all of the short-answer questions correctly, what is the minimum percent of open-response questions that Theresa must answer correctly in order to receive a score of 90% on the test? Show your work or explain how you obtained your answer.

Reporting Category for Item 20: ***Number Sense and Operations***

㉑ Alex wanted to find a pattern to predict the total number of diagonals in a convex polygon. He used each of the figures below to determine the number of diagonals in the 4-sided convex polygon and the 5-sided convex polygon shown below.



4-sided convex polygon



5-sided convex polygon

a. Create a table like the one shown below in your Student Answer Booklet. Complete the table to show the relationship between the number of sides, the number of diagonals drawn from each vertex, and the total number of diagonals in each of the convex polygons listed.

Number of sides	4	5	6	7	8
Number of diagonals from each vertex	1	2	3		
Total number of diagonals	2	5	9		

b. What is the total number of diagonals that a convex polygon of 12 sides has?

c. Write an expression which represents the number of diagonals that a convex polygon of *n* sides has.

*Reporting Category for Item 21: **Geometry***

Session 2, Multiple-Choice Questions

㉒ The rectangle shown below has a width of 2.5 feet and a perimeter of 13 feet.

What is the area of the rectangle?

A. 4 square feet

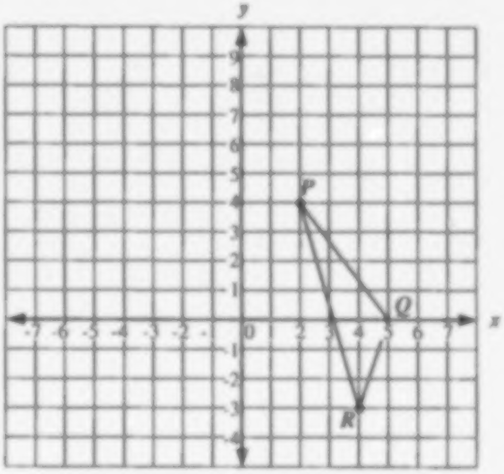
B. 8 square feet

C. 10 square feet

D. 10.5 square feet

*Reporting Category for Item 22: **Measurement***

㉓ Isaac is going to draw ΔSTU on the grid shown below so that it is congruent to ΔPQR.



He located point S at $(-1, 0)$ and point T at $(-4, 4)$. Which of the following coordinates represents a possible location for point U?

A. $(-3, 6)$

B. $(-3, 7)$

C. $(-4, 3)$

D. $(-4, 7)$

Reporting Category for Item 23: ***Geometry***

Mathematics, Grade 10

(24) An important formula in statistics is $z = \frac{(x - \mu)}{\sigma}$. Which of the following represents this equation solved for x in terms of z, μ, and σ?

A. $x = z\sigma + \mu$

B. $x = z\sigma - \mu$

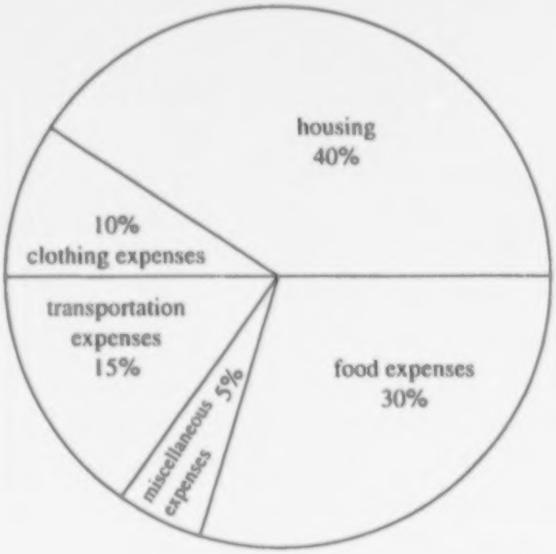
C. $x = \frac{z + \mu}{\sigma}$

D. $x = \frac{z - \mu}{\sigma}$

Reporting Category for Item 24: ***Patterns, Relations, and Algebra***

㉕ The circle graph below shows the Corbett family's monthly budget. The Corbett family has a total monthly income of $2,000.

Corbett Family's Monthly Budget



Mr. Corbett received a $100 per month raise. He increased the transportation expense portion of the monthly budget by $100. To the nearest percent, what portion of the Corbetts' income is now being spent on transportation expenses?

A. 14 percent

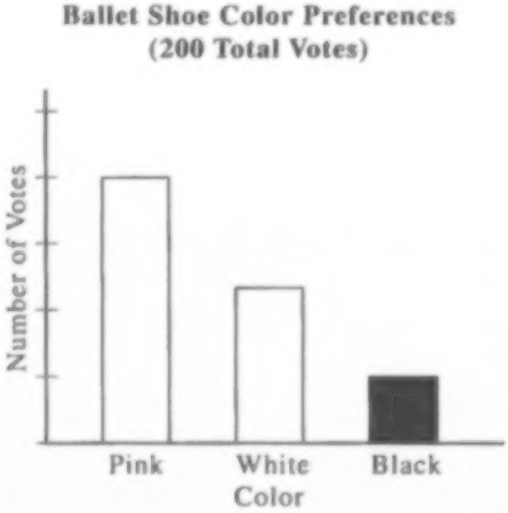
B. 19 percent

C. 20 percent

D. 21 percent

Reporting Category for Item 25: ***Data Analysis, Statistics, and Probability***

(26) A company that makes ballet shoes surveyed 200 customers. Each customer voted for one favorite color of ballet shoe. The bar graph shows the results.



Based on the data in the graph, which of the following is the **best** estimate of the number of customers who voted for "Pink"?

A. 80

B. 110

C. 140

D. 170

Reporting Category for Item 26: ***Number Sense and Operations***

㉗ If the graphs of $y = 5x + 40$ and $y = 10x + 20$ are drawn on the same axes, they will

A. not intersect.

B. intersect at (5, 10).

C. intersect at (4, 60).

D. intersect at (12, 100).

Reporting Category for Item 27: ***Patterns, Relations, and Algebra***

㉘ Let x and y be real numbers with $x < y < 1$. Which of the following is **always** a real number that lies between x and y?

A. $x - y$

B. $x + y$

C. $\frac{x - y}{2}$

D. $\frac{x + y}{2}$

Reporting Category for Item 28: ***Number Sense and Operations***

(29) The average life spans of some animals are shown in the chart below.

Animal Life Spans

Animal	Average Life Span (in years)
Bear	22
Chicken	7
Deer	12
Dog	11
Duck	10
Elephant	35
Fox	9
Horse	22
Hippopotamus	30
Wolf	11

Source: Farmer's Almanac 2000.

Based on the information given in the chart, which of the following statistics yields the greatest numerical value?

A. mean

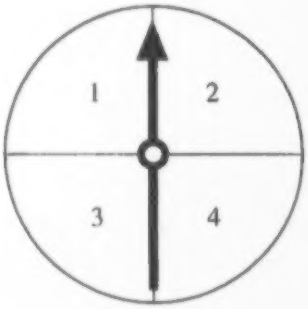
B. median

C. mode

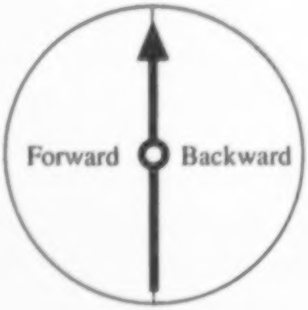
D. range

Reporting Category for Item 29: ***Data Analysis, Statistics, and Probability***

㉚ Janet is playing a game using the two spinners shown below. She will spin the arrow on each spinner once and will move a specified number of steps forward or backward according to the results of the spins.



Spinner 1



Spinner 2

What is the probability that Janet will have to move backward **less than** 4 steps?

A. $\frac{1}{8}$

B. $\frac{3}{8}$

C. $\frac{1}{2}$

D. $\frac{3}{4}$

Reporting Category for Item 30: ***Data Analysis, Statistics, and Probability***

Mathematics, Grade 10

Session 2, Open-Response Question

㉛ When a diver goes underwater, the weight of the water exerts pressure on the diver. The table below shows how the water pressure on the diver increases as the diver's depth increases.

Water Pressure on a Diver

Diver's Depth (in feet)	Water Pressure (in pounds per square inch)
10	4.4
20	8.8
30	13.2
40	17.6
50	22.0

a. Based on the table above, what will be the water pressure on a diver at a depth of 60 feet? Show your work or explain how you obtained your answer.

b. Based on the table above, what will be the water pressure on a diver at a depth of 100 feet? Show your work or explain how you obtained your answer.

c. Write an equation that describes the relationship between the depth, D, and the pressure, P, based on the pattern shown in the table.

d. Use your equation from part c to determine the depth of the diver, assuming the water pressure on the diver is 46.2 pounds per square inch. Show your work or explain how you obtained your answer.

Reporting Category for Item 31: ***Patterns, Relations, and Algebra***

Session 2, Multiple-Choice Questions

(32) In her closet, Megan has 6 different T-shirts, 5 different pairs of shorts, and 2 different hats. She pulls out 1 T-shirt, 1 pair of shorts, and 1 hat without looking. How many different combinations of 1 T-shirt, 1 pair of shorts, and 1 hat are possible?

A. 11

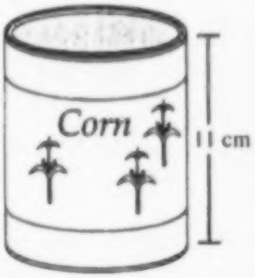
B. 16

C. 32

D. 60

Reporting Category for Item 32: ***Data Analysis, Statistics, and Probability***

(33) The can of corn shown below is a right circular cylinder with a height of 11 cm. The volume of the can is 486 cubic centimeters.



What is the approximate radius of the can of corn?

A. 1.3 cm

B. 3.8 cm

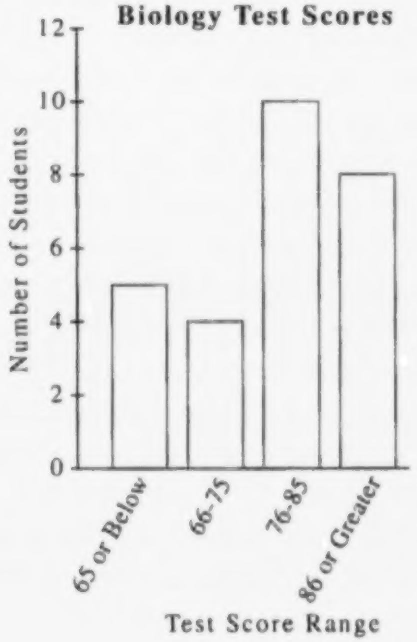
C. 7.0 cm

D. 14.1 cm

Reporting Category for Item 33: ***Number Sense and Operations***

273

(34) The bar graph below shows the distribution of scores on a biology test.



Based on the graph, which of the following is **not** a valid conclusion?

A. The total number of students tested was 27.

B. At least 5 students scored fewer than 60 points.

C. A total of 9 students scored 75 points or fewer.

D. At least 8 students scored more than 80 points.

Reporting Category for Item 34: ***Data Analysis, Statistics, and Probability***

㉟ The lengths of three sides of a triangle are 5, 9, and x, all measured in centimeters. What are all possible values of x?

A. $4 < x < 14$

B. $0 < x < 14$

C. $5 < x < 15$

D. $3 < x < 9$

Reporting Category for Item 35: ***Geometry***

㊱ A set contains the numbers

$$\frac{8}{2}, -2.3, 0, \frac{2}{7}, \sqrt{9}, 0.\overline{31}, \sqrt{15}, -12, 2\pi.$$

Which of the following statements is true?

A. The set contains 8 irrational numbers.

B. The set contains 7 irrational numbers.

C. The set contains 3 irrational numbers.

D. The set contains 2 irrational numbers.

Reporting Category for Item 36: ***Number Sense and Operations***

㊲ Aircraft design engineers use the formula $V = \sqrt{\frac{841L}{CS}}$ to determine the safe landing speed of aircraft where

V = safe landing speed in feet per second
L = gross weight of the aircraft in pounds
C = coefficient of lift
S = wing surface area in square feet.

What is the approximate safe landing speed for an aircraft with a gross weight of 9000 pounds and a wing surface area of 225 square feet, when the coefficient of lift is 2.8?

A. 4 feet per second

B. 110 feet per second

C. 414 feet per second

D. 22,000 feet per second

Reporting Category for Item 37: ***Number Sense and Operations***

㊳ On January 1, 2000, a car had a value of $15,000. Each year after that, the car's value will decrease by 20 percent of the previous year's value. Which expression represents the car's value on January 1, 2003?

A. $15{,}000(0.8)^3$

B. $15{,}000(0.8)^4$

C. $15{,}000(0.2)^3$

D. $15{,}000(0.2)^4$

Reporting Category for Item 38: ***Patterns, Relations, and Algebra***

㊴ Which of the following equations represents a line that is parallel to the line $4x - 2y = 8$ and passes through the point $(0, -8)$?

A. $2x + y = -4$

B. $2x - y = 8$

C. $x - 2y = 8$

D. $x - 2y = 16$

Reporting Category for Item 39: ***Geometry***

㊵ What is the effect on the circumference of a circle if the circle's radius is doubled?

A. The circumference is multiplied by 2.

B. The circumference is multiplied by 4.

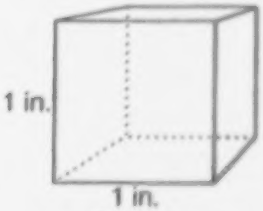
C. The circumference is multiplied by 8.

D. The circumference stays the same.

Reporting Category for Item 40: ***Measurement***

Session 2, Open-Response Questions

㊶ Cube A is a 1-inch solid cube. Figure B shows a 1-inch solid cube after a cylindrical hole has been drilled through its center. The diameter of the cylindrical hole is $\frac{1}{2}$ inch, and its height is perpendicular to two opposite faces of the original cube, as shown in the diagram.



Cube A

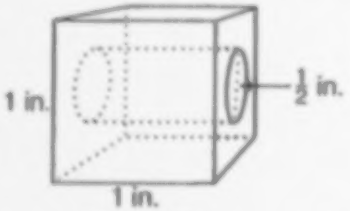


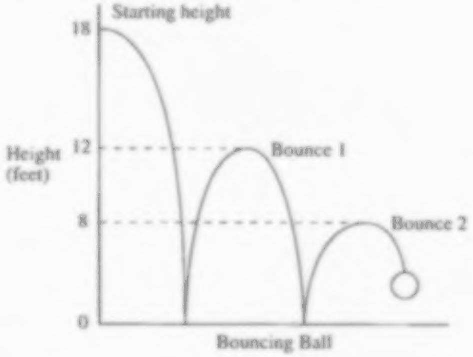
Figure B

a. What is the total surface area of Cube A?

b. What is the total surface area of Figure B? Show your work or explain how you obtained your answer.

Reporting Category for Item 41: ***Measurement***

(42) The diagram shown below represents the path of a ball that is dropped from a height of 18 feet. On its first bounce, the ball rebounds to a height of 12 feet; on its second bounce, it rebounds to a height of 8 feet.



a. Show that the ratio of the height of Bounce 1 to the starting height is equal to the ratio of the height of Bounce 2 to the height of Bounce 1. Show your work or explain how you obtained your answer.

b. Create a table like the one shown below in your Student Answer Booklet.

Bounce, *b*	**Height, *h* (in feet)**
0 (Starting height)	18
1	12
2	8
3	
4	
5	

If the pattern in the table continues, complete your table to show the height of bounces 3, 4, and 5.

c. Based on the pattern shown in the table, if *h* is the height of a certain bounce, write an expression that represents the height of the next bounce in terms of *h*.

d. Based on the pattern shown in the table, write an equation that represents the relationship between height, *h*, and bounce, *b*.

Reporting Category for Item 42: ***Patterns, Relations, and Algebra***

X. Science and Technology/Engineering, Grade 5

Science and Technology/Engineering, Grade 5

The spring 2002 Grade 5 MCAS Science and Technology/Engineering test was based on the learning standards of the Massachusetts *Science and Technology/Engineering Curriculum Framework* (2001). The *Framework* defines four content strands:

- *Strand 1: Earth and Space Science*
- *Strand 2: Life Science (Biology)*
- *Strand 3: Physical Sciences (Chemistry and Physics)*
- *Strand 4: Technology/Engineering*

These content strands are specifically referenced in the MCAS document, *Overview of the MCAS 2002 Tests.*

Curriculum Framework *Learning Standards*

Learning standards are grouped below by *Framework* content strand and related MCAS subcategory[3], and are directly quoted from the *Framework*. Applicable *Framework* page numbers are shown in parentheses.

Strand 1: Earth and Space Science (*Framework*, pp. 22-26)

Rocks and Their Properties

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Give a simple explanation of what a mineral is and some examples (e.g., quartz, mica).
- Identify the physical properties of minerals (hardness, color, luster, cleavage, and streak) and explain how minerals can be tested for these different physical properties.
- Identify the three catagories of rocks (metamorphic, igneous, and sedimentary) based on how they are formed, and explain the natural and physical processes that create these rocks.

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[3] A very small percentage—less than 1%—of *Science and Technology/Engineering Curriculum Framework* learning standards that are impractical to test in a large-scale assessment are not tested by MCAS (e.g., at grade 10: "use a range of exploratory techniques, e.g., experiments, information/literature searches, data logging, research and development"). These learning standards are not included in this document.

Soil

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Explain and give examples of the ways in which soil is formed (the weathering of rock by water and wind and from the decomposition of plant and animal remains).
- Recognize and discuss the different properties of soil, including color, texture (size of particles), the ability to retain water, and the ability to support the growth of plants.

Weather

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Explain how air temperature, moisture, wind speed and direction, and precipitation make up the weather in a particular place and time.
- Distinguish among the various forms of precipitation (rain, snow, sleet, and hail), making connections to the weather in a particular place and time.
- Describe how global patterns such as the jet stream and water currents influence local weather in measurable terms such as temperature, wind direction and speed, and precipitation.
- Differentiate between weather and climate.

The Water Cycle

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Describe how water on earth cycles in different forms and in different locations, including underground and in the atmosphere.
- Give examples of how the cycling of water, both in and out of the atmosphere, has an effect on climate.

Earth's History

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Give examples of how the surface of the earth changes due to slow processes such as erosion and weathering, and rapid processes such as landslides, volcanic eruptions, and earthquakes.

The Earth in the Solar System

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Recognize that the earth is part of a system called the "solar system" that includes the sun (a star), planets, and many moons. The earth is the third planet from the sun in our solar system.
- Recognize that the earth revolves around (orbits) the sun in a year's time and that the earth rotates on its axis once approximately every 24 hours. Make connections between the rotation of the earth and day/night, and the apparent movement of the sun, moon, and stars across the sky.
- Describe the changes that occur in the observable shape of the moon over the course of a month.

Strand 2: Life Science (Biology) (*Framework*, pp. 41-44)

Characteristics of Plants and Animals

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Classify plants and animals according to the characteristics that they share.

Plant Structures and Functions

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Identify the structures in plants that are responsible for food making, reproduction, growth, and protection.
- Recognize that plants and animals go through predictable life cycles that include birth, growth, development, reproduction, and death.
- Describe the major stages that characterize the life cycle of the frog and butterfly as they go through metamorphosis.
- Differentiate between observed characteristics of plants and animals that are fully inherited (e.g., color of flower, shape of leaves, color of eyes, number of appendages) and characteristics that are not inherited (e.g., browning of leaves due to too much sun, language spoken).

Adaptations of Living Things

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Give examples of how inherited characteristics may change over time as adaptations to changes in the environment that enable organisms to survive (e.g., shape of beak or feet, placement of eyes on head, length of neck, shape of teeth, color).
- Give examples of how changes in the environment have caused some plants and animals to die or move to new locations (migration).
- Describe how organisms meet some of their needs in an environment by using behaviors (patterns of activities) in response to information (stimuli) received from the environment. Recognize that some animal behaviors are instinctive (e.g., turtles burying their eggs), and others are learned (e.g., humans building fires for warmth, chimpanzees learning how to use tools).
- Recognize plant behaviors, such as the way seedlings' stems grow toward light and their roots grow downward in response to gravity. Recognize that many plants and animals can survive harsh environments because of seasonal behaviors (e.g., in winter, some trees shed leaves, some animals hibernate, and other animals migrate).
- Give examples of how organisms can cause changes in their environment to ensure survival. Explain how some of these changes may affect the ecosystem.

Energy and Living Things

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Describe how energy derived from the sun is used by plants to produce sugars (photosynthesis) and is transferred within a food chain from producers (plants) to consumers to decomposers.

Strand 3: Physical Sciences (Chemistry and Physics)

(*Framework*, pp. 57-59)

Properties of Objects and Materials

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Differentiate between properties of objects (e.g., size, shape, weight) and properties of materials (e.g., color, texture, hardness).

States of Matter

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Compare and contrast solids, liquids, and gases based on the basic properties of each state of matter.
- Describe how water can be changed from one state to another by adding or taking away heat.

Forms of Energy

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Identify the basic forms of energy (light, sound, heat, electrical, and magnetic). Recognize that energy is the ability to cause motion or create change.
- Give examples of how energy can be transferred from one form to another.

Electrical Energy

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Recognize that electricity in circuits requires a complete loop through which an electrical current can pass, and that electricity can produce light, heat, and sound.
- Identify and classify objects and materials that conduct electricity and objects and materials that are insulators of electricity.
- Explain how electromagnets can be made, and give examples of how they can be used.

Magnetic Energy

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Recognize that magnets have poles that repel and attract each other.
- Identify and classify objects and materials that a magnet will attract and objects and materials that a magnet will not attract.

Sound Energy

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Recognize that sound is produced by vibrating objects and requires a medium through which to travel. Relate the rate of vibration to the pitch of the sound.

Light Energy

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Recognize that light travels in a straight line until it strikes an object or travels from one medium to another, and that light can be reflected, refracted, and absorbed.

Strand 4: Technology/Engineering (*Framework*, pp. 75-76)

1. Materials and Tools

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Identify materials used to accomplish a design task based on a specific property (e.g., weight, strength, hardness, and flexibility).
- Identify and explain the appropriate materials and tools (e.g., hammer, screwdriver, pliers, tape measure, screws, nails and other mechanical fasteners) to construct a given prototype safely.
- Identify and explain the difference between simple and complex machines (e.g., hand can opener that includes multiple gears, wheel, wedge gear, and lever).

2. Engineering Design

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Identify a problem that reflects the need for shelter, storage, or convenience.
- Describe different ways in which a problem can be represented (e.g., sketches, diagrams, graphic organizers, and lists).
- Identify relevant design features (e.g., size, shape, weight) for building a prototype of a solution to a given problem.
- Compare natural systems with mechanical systems that are designed to serve similar purposes (e.g., bird's wings as compared to an airplane's wings).

MCAS Reporting Categories

In *Test Item Analysis Reports* and on the *Subject Area Subscore* of the MCAS *School* and *District Reports*, Science and Engineering/Technology test results are reported under the following four MCAS reporting categories, which are identical to the four *Science and Engineering/Technology Curriculum Framework* content strands:

- Earth and Space Science
- Life Science (Biology)
- Physical Sciences (Chemistry and Physics)
- Technology/Engineering

MCAS Spring 2002 Common Test Items
Science and Technology/Engineering, Grade 5

Test Sessions

MCAS grade 5 Science and Technology/Engineering Student Test Booklets included 2 separate test sessions. Each session included multiple-choice and open-response questions.

Reference Materials and Tools

No reference tools or materials were allowed during any grade 5 Science and Technology/Engineering test session.

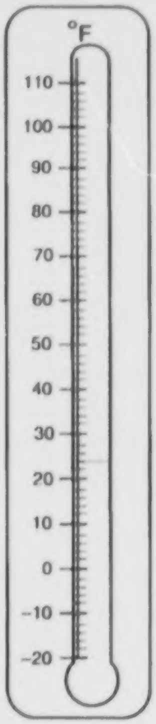
Cross-Reference Information

The shaded bar underneath each item indicates the item's MCAS reporting category and the MCAS subcategory that contains the *Framework* learning standard(s) assessed by the item.

Science and Technology/Engineering, Grade 5

Session 1, Multiple-Choice Questions

① The diagram below shows a weather thermometer.



Which of the following is **most likely** to occur at the temperature shown?

A. rain

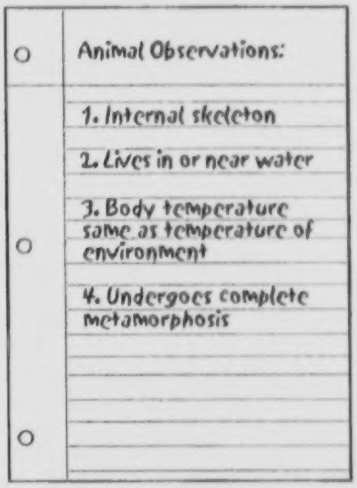
B. fog

C. hail

D. snow

Reporting Category/Subcategory for Item 1: ***Earth and Space Science/Weather***

Use the picture below to answer question 2.



Animal Observations:

1. Internal skeleton
2. Lives in or near water
3. Body temperature same as temperature of environment
4. Undergoes complete metamorphosis

2 A student wrote the notes shown above while learning about an animal. What animal was the student studying?

A. raccoon

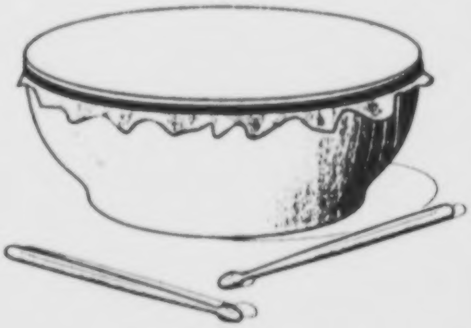
B. cricket

C. lizard

D. frog

*Reporting Category/*Subcategory for Item 2: ***Life Science (Biology)/*****Characteristics of Plants and Animals**

③ The picture below shows a drum made from a wooden bowl with rubber stretched across the top.



What could be done to raise the pitch of the sound from this drum?

A. tighten the rubber skin of the drum

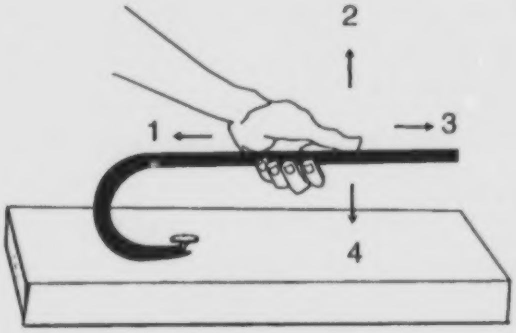
B. cover the drum with a blanket

C. strike the drum harder

D. use thicker rubber to make the drum skin

Reporting Category/Subcategory for Item 3: ***Physical Sciences (Chemistry and Physics)/Sound Energy***

④ The picture below shows a crowbar being used to remove a nail from a piece of wood.



A crowbar can be used as a lever. The arrows with numbers show the directions in which force can be applied to the crowbar. In which direction should force be applied to the crowbar in order to remove the nail from the board?

A. direction 1

B. direction 2

C. direction 3

D. direction 4

*Reporting Category/*Subcategory for Item 4: ***Technology/Engineering*/Materials and Tools**

⑤ The change from day to night on Earth can be explained by

A. the movement of the Sun.

B. the rotation of Earth.

C. the movement of the Moon.

D. the tilt of Earth.

*Reporting Category/*Subcategory for Item 5: ***Earth and Space Science*/The Earth in the Solar System**

⑥ Hummingbirds can hover in the air and fly very quickly. This benefits the hummingbird in all of the following **except**

A. quickly escaping predators.

B. easily reaching flowers.

C. staying in one place to drink nectar.

D. keeping eggs warm.

*Reporting Category/*Subcategory for Item 6: ***Life Science (Biology)/*****Adaptations of Living Things**

⑦ A student picked up a small rock using a magnet. The rock probably contained

A. quartz.

B. diamond.

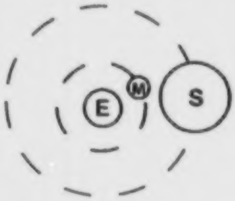
C. aluminum.

D. iron.

*Reporting Category/*Subcategory for Item 7: ***Physical Sciences (Chemistry and Physics)/*****Magnetic Energy**

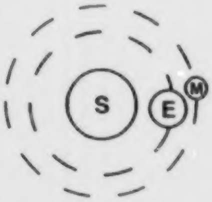
⑧ Which diagram shows the correct orbital relationship between Earth, the Moon, and the Sun?

A.

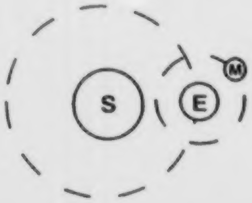


Key
E – Earth
S – Sun
M – Moon

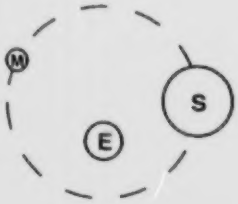
B.



C.



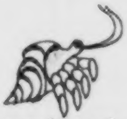
D.



Reporting Category/Subcategory for Item 5: ***Earth and Space Science*/The Earth in the Solar System**

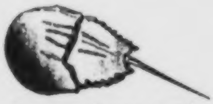
⑨ An engineer is trying to design a faster submarine. Which of the following animals would be most useful for the engineer to study?

A.



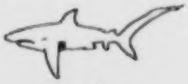
hermit crab

B.



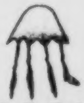
horseshoe crab

C.



shark

D.



jellyfish

*Reporting Category/*Subcategory for Item 9: ***Technology/Engineering/*****Engineering Design**

Session 1, Open-Response Question

⑩ Different organisms are adapted to survive in different environments.

a. Name one organism from a desert (hot and dry) environment.

b. Identify two of its adaptations and explain how these adaptations help the organism survive in its environment.

*Reporting Category/*Subcategory for Item 10: ***Life Science (Biology)*/Adaptations of Living Things**

Session 2, Multiple-Choice Questions

⑪ Rocks can be classified by their physical characteristics. The table below indicates the colors and textures of some rocks.

Rock Characteristics

Type of Rock	Texture	Color
Pumice	grainy	white, tan, gray
Sandstone	fine to grainy	white, tan, brown, gray
Shale	fine	gray, black
Granite	coarse	gray, white
Conglomerate	coarse	white, tan, gray, brown, black

Based on the table, a black rock with a fine texture is **most likely** what kind of rock?

A. pumice

B. sandstone

C. shale

D. granite

*Reporting Category/*Subcategory for Item 11: ***Earth and Space Science*/Rocks and Their Properties**

⑫ Camels have humps on their backs that store fat, allowing them to survive for many days without food. This makes camels well suited to desert life. This characteristic is an example of

A. adaptation.

B. instinct.

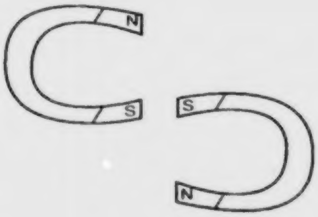
C. migration.

D. hibernation.

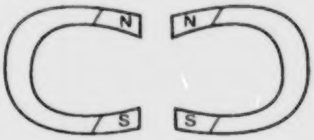
*Reporting Category/*Subcategory for Item 12: ***Life Science (Biology)*/Adaptations of Living Things**

⑬ Which of the following diagrams shows a magnet being attracted to another magnet?

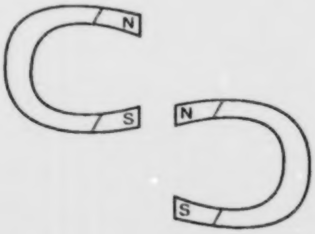
A.



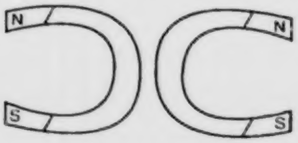
B.



C.

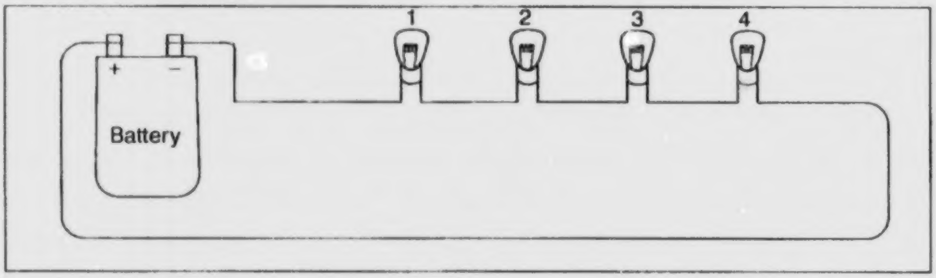


D.



*Reporting Category/*Subcategory for Item 13: ***Physical Sciences (Chemistry and Physics)***/**Magnetic Energy**

⑭ The picture below shows a circuit.



What will happen if the second bulb is removed from the circuit?

A. Only light 1 will go out.

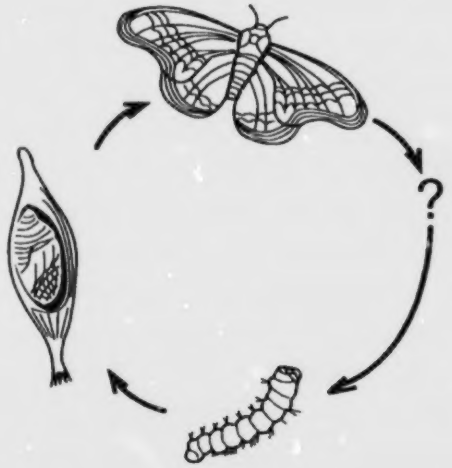
B. All of the other lights will go out.

C. All of the other lights will stay on.

D. Only lights 3 and 4 will go out.

*Reporting Category/*Subcategory for Item 14: ***Physical Sciences (Chemistry and Physics)*/Electrical Energy**

⑮ The diagram below shows the life cycle of a moth.



Which stage is missing from this life cycle of the moth?

A. egg

B. caterpillar

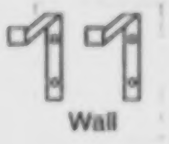
C. pupa

D. adult

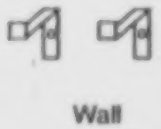
Reporting Category/Subcategory for Item 15: ***Life Science (Biology)*/Plant Structures and Functions**

⑯ Jamie wants to put a rack on the wall to store his bicycle. Which pair of brackets below would do the **best** job of securely holding the bicycle?

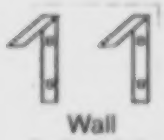
A.



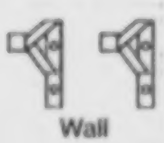
B.



C.

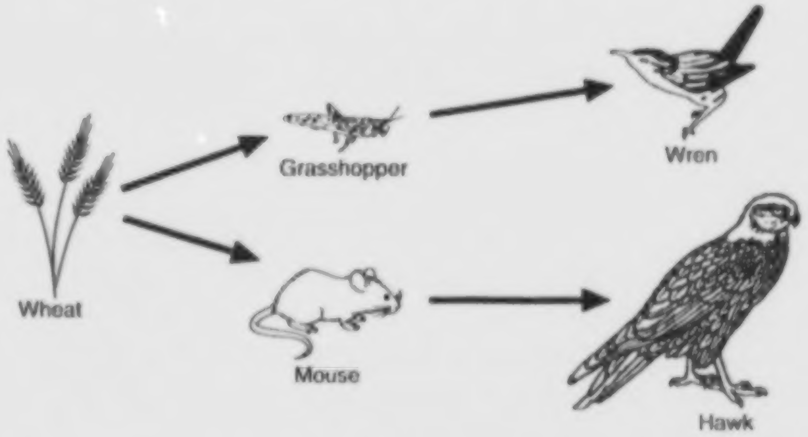


D.



Reporting Category/Subcategory for Item 16: ***Technology/Engineering/Engineering Design***

⑰ The diagram below shows a food chain.



What change to this food chain would **most likely** result in an increase in the mouse population?

A. decrease the amount of wheat

B. decrease the number of hawks

C. increase the number of grasshoppers

D. decrease the number of wrens

Reporting Category/Subcategory for Item 17: ***Life Science (Biology)*/Energy and Living Things**

⑱ Which of the following is **most likely** to cause water to change from one state of matter to another state of matter?

A. increased precipitation

B. the weathering of rocks

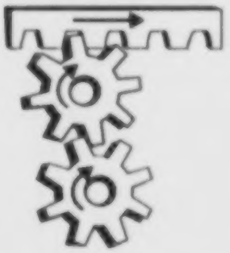
C. a decrease in wind speed

D. a change in air temperature

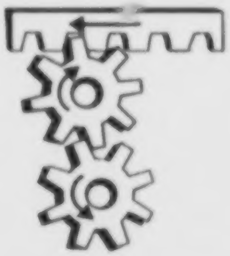
Reporting Category/Subcategory for Item 18: ***Earth and Space Science*/The Water Cycle**

⑲ Which of the following diagrams indicates the correct motion of the parts?

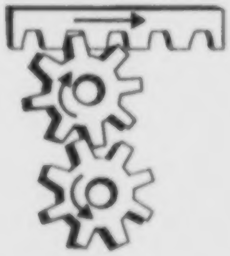
A.



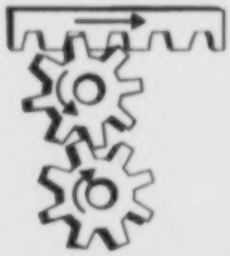
B.



C.



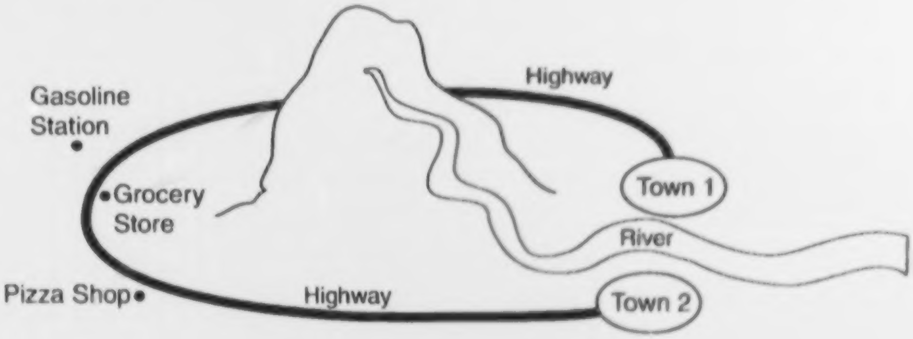
D.



*Reporting Category/*Subcategory for Item 19: ***Technology/Engineering/*****Materials and Tools**

Session 2, Open-Response Question

⑳ Town 1 and Town 2 are located along the coast. They are separated from each other by a river. The only way you can reach one town from the other by car is to drive on the highway for two hours. Residents have decided that they need to find ways to reduce their travel time from one town to the other.


Gasoline Station
Highway
Grocery Store
Town 1
River
Pizza Shop
Highway
Town 2

a. Identify **two** possible ways to reduce travel time from one town to the other.

b. Choose **one** of these ways and describe **two** new problems that it might cause.

*Reporting Category/*Subcategory for Item 20: ***Technology/Engineering/Engineering Design***

XI. Science and Technology/Engineering, Grade 8

Science and Technology/Engineering, Grade 8

The spring 2002 Grade 8 MCAS Science and Technology/Engineering test was based on the learning standards of the Massachusetts *Science and Technology Curriculum Framework* (2001). The *Framework* defines four content strands:

- *Strand 1: Earth and Space Science*
- *Strand 2: Life Science (Biology)*
- *Strand 3: Physical Sciences (Chemistry and Physics)*
- *Strand 4: Technology/Engineering*

These content strands are specifically referenced in the MCAS document, *Overview of the MCAS 2002 Tests.*

Curriculum Framework *Learning Standards*

Learning standards are grouped below by *Framework* content strand and related MCAS subcategory[4], and are directly quoted from the *Framework*. Applicable *Framework* page numbers are shown in parentheses.

Strand 1: Earth and Space Science (*Framework*, pp. 29-30)

Mapping the Earth

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Recognize, interpret, and be able to create models of the earth's common physical features in various mapping representations, including contour maps.

Earth's Structure

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Describe the layers of the solid earth, including the lithosphere, the hot convecting mantle, and the dense metallic core.

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[4] A very small percentage—less than 1%—of *Science and Technology/Engineering Curriculum Framework* learning standards that are impractical to test in a large-scale assessment are not tested by MCAS (e.g., at grade 10: "use a range of exploratory techniques, e.g., experiments, information/literature searches, data logging, research and development"). These learning standards are not included in this document.

Heat Transfer in the Earth's System

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Differentiate among radiation, conduction, and convection, the three mechanisms by which heat is transferred through the earth's system.
- Explain the relationship among the energy provided by the sun, the global patterns of atmospheric movement, and the temperature differences among water, land, and atmosphere.

Earth's History

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Describe how the movement of the earth's crustal plates causes both slow changes in the earth's surface (e.g., formation of mountains and ocean basins) and rapid ones (e.g., volcanic eruptions and earthquakes).
- Describe and give examples of ways in which the earth's surface is built up and torn down by natural processes, including deposition of sediments, rock formation, erosion, and weathering.
- Explain and give examples of how physical evidence, such as fossils and surface features of glaciation, supports theories that the earth has evolved over geological time.

The Earth in the Solar System

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Recognize that gravity is a force that pulls all things on and near the earth toward the center of the earth. Gravity plays a major role in the formation of the planets, stars, and solar system and in determining their motions.
- Describe lunar and solar eclipses, the observed moon phases, and tides. Relate them to the relative positions of the earth, moon, and sun.
- Compare and contrast properties and conditions of objects in the solar system (e.g., sun, planets, and moons) to those on earth (e.g., gravitational force, distance from the sun, speed, movement, temperature, and atmospheric conditions).
- Explain how the tilt of the earth and its revolution around the sun result in an uneven heating of the earth, which in turn causes the seasons.
- Recognize that the universe contains many billions of galaxies, and that each galaxy contains many billions of stars.

Strand 2: Life Science (Biology) (*Framework*, pp. 46-48)

Classification of Organisms

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Classify organisms into the currently recognized kingdoms according to characteristics that they share. Be familiar with organisms from each kingdom.

Structure and Function of Cells

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Recognize that all organisms are composed of cells, and that most organisms are single-celled (unicellular); (e.g., bacteria, yeast). In these single-celled organisms, one cell must carry out all of the basic functions of life.
- Compare and contrast plant and animal cells, including major organelles (cell membrane, cell wall, nucleus, cytoplasm, chloroplasts, mitochondria, vacuoles).
- Recognize that within cells, many of the basic functions of organisms (e.g., extracting energy from food and getting rid of waste) are carried out. The way in which cells function is similar in all living organisms.

Systems in Living Things

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Describe the hierarchical organization of multicellular organisms from cells to tissues to organs to systems to organisms.
- Identify the general functions of the major systems of the human body (digestion, respiration, reproduction, circulation, excretion, protection from disease, and movement, control, and coordination) and describe ways that these systems interact with each other.

Reproduction and Heredity

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Recognize that every organism requires a set of instructions that specifies its traits. These instructions are stored in the organism's chromosomes. Heredity is the passage of these instructions from one generation to another.
- Recognize that hereditary information is contained in genes located in the chromosomes of each cell. A human cell contains about 30,000 different genes on 23 different chromosomes.

- Compare sexual reproduction (offspring inherit half of their genes from each parent) with asexual reproduction (offspring is an identical copy of the parent's cell).

Evolution and Biodiversity

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Give examples of ways in which genetic variation and environmental factors are causes of evolution and the diversity of organisms.
- Recognize that evidence drawn from geology, fossils, and comparative anatomy provide the basis of the theory of evolution.
- Relate the extinction of species to a mismatch of adaptation and the environment.

Living Things and Their Environment

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Give examples of ways in which organisms interact and have different functions within an ecosystem that enable the ecosystem to survive.

Energy and Living Things

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Explain the roles and relationships among producers, consumers, and decomposers in the process of energy transfer in a food web.
- Explain how dead plants and animals are broken down by other living organisms and how this process contributes to the system as a whole.
- Recognize that producers (plants that contain chlorophyll) use the energy from sunlight to make sugars from carbon dioxide and water through a process called photosynthesis. This food can be used immediately, stored for later use, or used by other organisms.

Changes in Ecosystems Over Time

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Identify ways in which ecosystems have changed throughout geologic time in response to physical conditions, interactions among organisms, and the actions of humans. Describe how changes may be catastrophes such as volcanic eruptions or ice storms.

- Recognize that biological evolution accounts for the diversity of species developed through gradual processes over many generations.

Strand 3: Physical Sciences (Chemistry and Physics) (*Framework*, pp. 60-62)

Properties of Matter

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Differentiate between weight and mass, recognizing that weight is the amount of gravitational pull on an object.
- Differentiate between volume and mass. Define density.
- Recognize that the measurement of volume and mass requires understanding of the sensitivity of measurement tools (e.g., rulers, graduated cylinders, balances) and knowledge and appropriate use of significant digits.
- Explain and give examples of how mass is conserved in a closed system.

Elements, Compounds, and Mixtures

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Recognize that there are more than 100 elements that combine in a multitude of ways to produce compounds that make up all of the living and nonliving things that we encounter.
- Differentiate between an atom (the smallest unit of an element that maintains the characteristics of that element) and a molecule (the smallest unit of a compound that maintains the characteristics of that compound).
- Give basic examples of elements and compounds.
- Differentiate between mixtures and pure substances.
- Recognize that a substance (element or compound) has a melting point and a boiling point, both of which are independent of the amount of the sample.
- Differentiate between physical changes and chemical changes.

Motion of Objects

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Explain and give examples of how the motion of an object can be described by its position, direction of motion, and speed.
- Graph and interpret distance vs. time graphs for constant speed.

Forms of Energy

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Differentiate between potential and kinetic energy. Identify situations where kinetic energy is transformed into potential energy and vice versa.

Heat Energy

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Recognize that heat is a form of energy and that temperature change results from adding or taking away heat from a system.
- Explain the effect of heat on particle motion through a description of what happens to particles during a change in phase.
- Give examples of how heat moves in predictable ways, moving from warmer objects to cooler ones until they reach equilibrium.

Strand 4: Technology/Engineering (*Framework*, pp. 76-79)

1. Materials, Tools, and Machines

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Given a design task, identify appropriate materials (e.g., wood, paper, plastic, aggregates, ceramics, metals, solvents, adhesives) based on specific properties and characteristics (e.g., weight, strength, hardness and flexibility).
- Identify and explain appropriate measuring tools, hand tools, and power tools used to hold, lift, carry, fasten, and separate, and explain their safe and proper use.
- Identify and explain the safe and proper use of measuring tools, hand tools, and machines (e.g., band saw, drill press, sanders, hammer, screwdriver, pliers, tape

measure, screws, nails, and other mechanical fasteners) needed to construct a prototype of an engineering design.

2. Engineering Design

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Identify and explain the steps of the engineering design process (e.g., identify the need or problem, research the problem, develop possible solutions, select the best possible solution(s), construct a prototype, test and evaluate, communicate the solution(s), and redesign).
- Demonstrate methods of representing solutions to a design problem (e.g., sketches, orthographic projections, multiview drawings).
- Describe and explain the purpose of a given prototype.
- Identify appropriate materials, tools, and machines needed to construct a prototype of a given engineering design.
- Explain how such design features as size, shape, weight, function and cost limitations would affect the construction of a given prototype.
- Identify the five elements of a universal systems model: goal, inputs, processes, outputs, and feedback.

3. Communication Technologies

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Identify and explain the components of a communication system (e.g., source, encoder, transmitter, receiver, decoder, storage, retrieval, and destination).
- Identify and explain the appropriate tools, machines, and electronic devices (e.g., drawing tools, computer-aided design, and cameras) used to produce and/or reproduce design solutions (e.g., engineering drawings, prototypes, and reports).
- Identify and compare communication technologies and systems (e.g., audio, visual, printed, and mass communication).
- Identify and explain how symbols and icons (e.g., international symbols and graphics) are used to communicate a message.

4. Manufacturing Technologies

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Describe and explain the manufacturing systems of custom and mass production.
- Explain and give examples of the impacts of interchangeable parts, components of mass produced products, and the use of automation (e.g., robotics).
- Describe a manufacturing organization (e.g., corporate structure, research and development, production, marketing, quality control, distribution).
- Explain basic processes in manufacturing systems (e.g., cutting, shaping, assembling, joining, finishing, quality control, and safety).

5. Construction Technologies

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Describe and explain parts of a structure (e.g., foundation, flooring, decking, wall, roofing systems).
- Identify and describe three major types of bridges (e.g., arch, beam, and suspension) and their appropriate uses (e.g., site, span, resources, and load).
- Explain how the forces of tension, compression, torsion, bending, and shear affect the performance of bridges.
- Describe and explain the effects of loads and structural shapes on bridges.

6. Transportation Technologies

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Identify and compare examples of transportation systems and devices that operate on each of the following: land, air, water, and space.
- Given a transportation problem, explain a possible solution using the universal systems model.
- Identify and describe three subsystems of a transportation vehicle or device (e.g., structural, propulsion, guidance, suspension, control, and support).
- Identify and explain lift, drag, friction, thrust, and gravity in a vehicle or device (e.g., cars, boats, airplanes, rockets).

7. Bioengineering Technologies

Students engage in problem solving, evaluating evidence, searching for connections, and the process of inquiry, in order to

- Explain examples of adaptive or assistive devices (e.g., prosthetic devices, wheelchairs, eyeglasses, grab bars, hearing aids, lifts, braces).
- Describe and explain adaptive and assistive bioengineered products (e.g., food, bio-fuels, irradiation, integrated pest management).

MCAS Reporting Categories

In *Test Item Analysis Reports* and on the *Subject Area Subscore* of the MCAS *School* and *District Reports*, Science and Engineering/Technology test results are reported under the following four MCAS reporting categories, which are identical to the four *Science and Engineering/Technology Curriculum Framework* content strands:

- Earth and Space Science
- Life Science (Biology)
- Physical Sciences (Chemistry and Physics)
- Technology/Engineering

MCAS Spring 2002 Common Test Items
Science and Technology/Engineering, Grade 8

Test Sessions

MCAS grade 8 Science and Technology/Engineering Student Test Booklets included 2 separate test sessions. Each session included multiple-choice and open-response questions.

Reference Materials and Tools

No reference tools or materials were allowed during any grade 8 Science and Technology/Engineering test session.

Cross-Reference Information

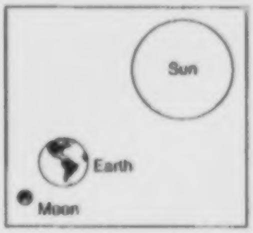
The shaded bar underneath each item indicates the item's MCAS reporting category and the MCAS subcategory that contains the *Framework* learning standard(s) assessed by the item.

Science and Technology/Engineering, Grade 8

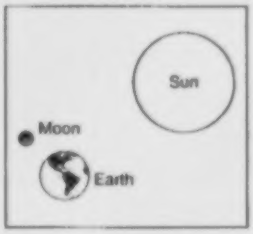
Session 1, Multiple-Choice Questions

① Which of the following diagrams represents a solar eclipse?

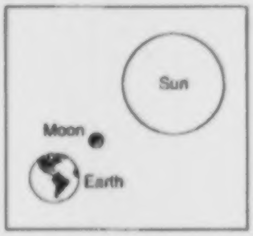
A.


Sun
Earth
Moon

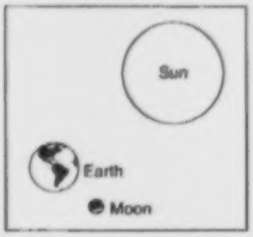
B.


Sun
Moon
Earth

C.


Sun
Moon
Earth

D.


Sun
Earth
Moon

*Reporting Category/*Subcategory for Item 1: ***Earth and Space Science*/The Earth in the Solar System**

② In a food chain, living organisms that eat plants and are a food source for other animals are called

A. decomposers.

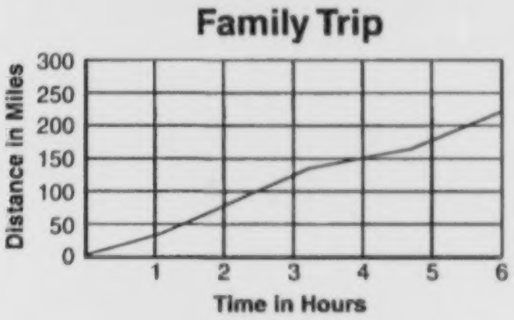
B. carnivores.

C. producers.

D. herbivores.

*Reporting Category/*Subcategory for Item 2: ***Life Science (Biology)/*****Energy and Living Things**

Use the graph below to answer question 3.



③ A family on vacation drove 220 miles in 6 hours. At which of the following times was their vehicle moving the slowest?

A. about 2 hours after their departure

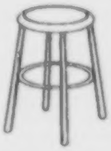
B. about 4 hours after their departure

C. about 5 hours after their departure

D. about 6 hours after their departure

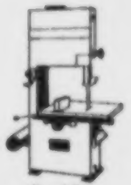
*Reporting Category/*Subcategory for Item 3: ***Physical Sciences (Chemistry and Physics)/*****Motion of Objects**

Use the picture below to answer question 4.



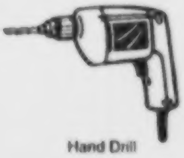
(4) In the manufacturing process of this four-legged wooden stool, each leg is angled 15° outward. Which tool or machine should be used to create the **most** accurate hole for each leg so the stool does not wobble when it rests on a flat surface?

A.



Band Saw

B.



Hand Drill

C.

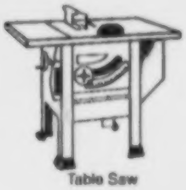
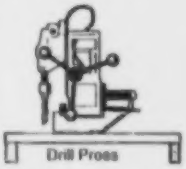


Table Saw

D.



*Reporting Category/*Subcategory for Item 4: ***Technology/Engineering*/Materials, Tools, and Machines**

Use the table below to answer question 5.

Effect of Potassium on Cucumber Yield

	Plot 1	Plot 2	Plot 3	Plot 4
Size (meter^2)	1.0	1.1	1.0	0.9
Amount of potassium applied (grams)	1.0	10.0	100.0	1000
Number of cucumbers	2	4	7	1
Average mass of each cucumber (grams)	113	181	227	91

⑤ John wanted to determine if increasing the amount of potassium in the soil of his garden would yield bigger cucumbers. He arranged four plots and gave each a different concentration of potassium. Which hypothesis **best** explains why the fourth plot yielded the poorest results?

A. Too much potassium probably damages the cucumber plants.

B. Any time potassium is added to soil, poor results occur.

C. The smaller plot accounts for the low cucumber yield and mass.

D. Weeds must have choked out the cucumbers growing there.

*Reporting Category/*Subcategory for Item 5: ***Life Science (Biology)/*****Living Things and Their Environment**

⑥ What is the **first** step in designing a product?

A. model a solution

B. communicate the solution

C. identify the need or want

D. build a prototype

*Reporting Category/*Subcategory for Item 6: ***Technology/Engineering/*****Engineering Design**

Science and Technology/Engineering, Grade 8

⑦ What happens when salt water is boiled?

A. The water evaporates and the salt remains in the beaker.

B. Both the salt and the water evaporate and leave the beaker.

C. The salt becomes a new compound.

D. The salt will evaporate from the water and disperse into the environment.

*Reporting Category/*Subcategory for Item 7: ***Physical Sciences (Chemistry and Physics)/*****Heat Energy**

⑧ Which of the following is **most** important in producing the seasons on Earth?

A. Earth's gravitational attraction to the Sun

B. the Moon's revolution around Earth

C. the distance of Earth from the Sun

D. the tilt of Earth's axis as it revolves around the Sun

*Reporting Category/*Subcategory for Item 8: ***Earth and Space Science/*****The Earth in the Solar System**

⑨ A scientist on a field trip discovered a new organism. She examined its cells under a microscope and observed several different structures, including a nucleus, a cell wall, and some chloroplasts. This organism would correctly be classified in which of the following kingdoms?

A. Animalia

B. Monera

C. Plantae

D. Fungi

*Reporting Category/*Subcategory for Item 9: ***Life Science (Biology)/*****Classification of Organisms**

Session 1, Open-Response Question

⑩ Explain **four** possible reasons why two areas of Earth with the same latitude can have very different average temperatures.

Reporting Category/Subcategory for Item 10: ***Earth and Space Science***/**Heat Transfer in the Earth's System**

Session 2, Multiple-Choice Questions

(11) A glass of water at 110°F is placed in a room next to a glass of water that is 50°F. The temperature of the room is 73°F at all times. If the two glasses were left in the room overnight, the temperature for both glasses of water the next day would be approximately

A. 43°F.

B. 50°F.

C. 73°F.

D. 90°F.

*Reporting Category/*Subcategory for Item 11: ***Physical Sciences (Chemistry and Physics)/*****Heat Energy**

(12) Which of the following gives a plant cell its rigid structure?

A. cell membrane

B. nucleus

C. cell wall

D. chloroplast

*Reporting Category/*Subcategory for Item 12: ***Life Science (Biology)/*****Structure and Function of Cells**

(13) Why do areas in the middle of a large continent generally have more extreme differences in temperature than areas near the coastline?

A. There are generally more clouds near the oceans.

B. Landlocked areas are usually at a lower altitude than coastline areas.

C. Coastlines are usually surrounded by mountains that block air masses.

D. Oceans change temperature slowly and regulate the temperature of nearby land.

*Reporting Category/*Subcategory for Item 13: ***Earth and Space Science/*****Heat Transfer in the Earth's System**

⑭ Steel is used for cables in suspension bridges because of its capacity for

A. tension.
B. torsion.
C. compression.
D. contraction.

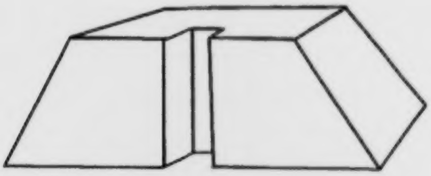
*Reporting Category/*Subcategory for Item 14: ***Technology/Engineering/*****Materials, Tools, and Machines**

⑮ Which of the following is **least** involved in the decomposition and decay of dead plants and animals?

A. worms
B. fungi
C. plant roots
D. microorganisms

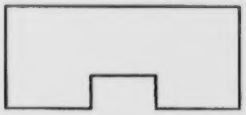
*Reporting Category/*Subcategory for Item 15: ***Life Science (Biology)/*****Energy and Living Things**

Use the figure below to answer question 16.

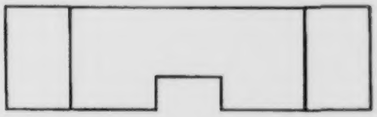


⑯ What would you see from the top view of the object above?

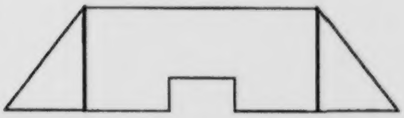
A.



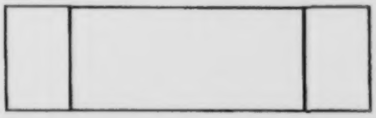
B.



C.



D.



*Reporting Category/*Subcategory for Item 16: ***Technology/Engineering/*Engineering Design**

⑰ Which of the following is a characteristic of elements?

A. They break down when reacting with acids.

B. They can be altered with an electric current.

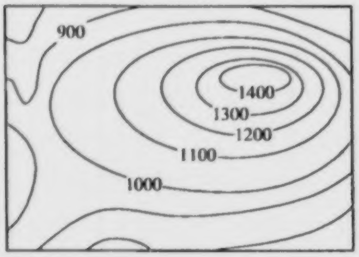
C. They are always metals.

D. They cannot be divided into smaller substances.

*Reporting Category/*Subcategory for Item 17: ***Physical Sciences (Chemistry and Physics)/*****Elements, Compounds, and Mixtures**

Use the illustration below to answer question 18.

1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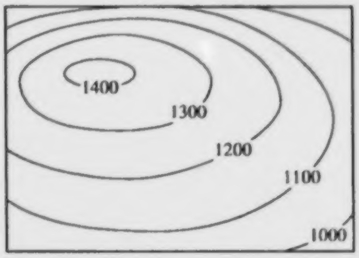
1000

Contour Intervals
in Meters

3


1400
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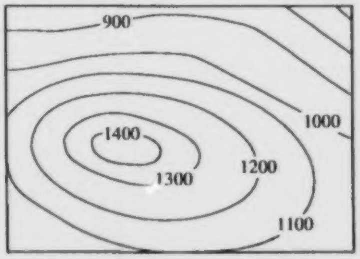
Contour Intervals
in Meters

2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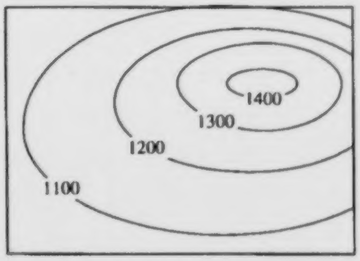
Contour Intervals
in Meters

4


1400
1300
1200
1100

Contour Intervals
in Meters

⑱ Which of the mountains above has the steepest slope?

A. 1

B. 2

C. 3

D. 4

Reporting Category/Subcategory for Item 18: ***Earth and Space Science/Mapping the Earth***

⑲ In the construction of a house, the words excavation, slab, and footing are associated with the

A. roof.

B. floor.

C. frame.

D. foundation.

*Reporting Category/*Subcategory for Item 19: ***Technology/Engineering/*****Construction Technologies**

Session 2, Open-Response Question

⑳ Jackie found a rock that has an irregular shape. The rock is small, but seems heavier than the rest of the small rocks in her collection. She would like to know the volume and mass of this rock.

a. Describe in detail the methods she would use to determine the volume and mass of the rock.

b. Describe how she would use the tools to make these measurements. Be sure to include the units of measure for volume and mass.

Reporting Category/Subcategory for Item 20: ***Physical Sciences (Chemistry and Physics)/Properties of Matter***

XII. History and Social Science, Grade 5

History and Social Science, Grade 5

The spring 2002 Grade 5 MCAS History and Social Science test was based on the learning standards and core knowledge topics of the Massachusetts *History and Social Science Curriculum Framework* (1997). Each test question assessed students' knowledge, concepts, and reasoning related to a specific learning standard; most questions also assessed knowledge, concepts, and reasoning related to a particular core knowledge topic.

Curriculum Framework *Learning Standards*

The *Framework* identifies four major study strands:

- History
- Geography
- Economics
- Civics and Government

The learning standards for each study strand are listed below and are directly quoted from the *Framework*; applicable *Framework* page numbers are shown in parentheses.

History (*Framework*, pp. 64–65, 74–75, 78–93)

1. **Chronology and Cause.** Students will understand the chronological order of historical events and recognize the complexity of historical cause and effect, including the interaction of forces from different spheres of human activity, the importance of ideas, and of individual choices, actions, and character.

2. **Historical Understanding.** Students will understand the meaning, implications, and import of historical events, while recognizing the contingency and unpredictability of history—how events could have taken other directions—by studying past ideas as they were thought, and past events as they were lived, by people of the time.

3. **Research, Evidence, and Point of View.** Students will acquire the ability to frame questions that can be answered by historical study and research; to collect, evaluate, and employ information from primary and secondary sources, and to apply it in oral and written presentations. They will understand the many kinds and uses of evidence; and by comparing competing historical narratives, they will differentiate historical fact from historical interpretation and from fiction.

4. **Society, Diversity, Commonality, and the Individual.** As a vast nation, the overwhelming majority of whose population derives from waves of immigration from many lands, the United States has a citizenry that exhibits a broad diversity in terms of race, ethnic traditions, and religious beliefs. The history of the United States exhibits perhaps the most important endeavor to establish a civilization founded on the principles that all people are created equal, that it is the purpose of government to secure the inalienable rights of all individuals, and that government derives "its just powers from the consent of the governed." It is also true, however, that federal, state, and local governments, as well as the people themselves, have often fallen short in practice of actualizing these high ideals, the most egregious violation being the acceptance of slavery in some states until the Civil War. Students should be expected to learn of the complex interplay that has existed from the beginning of our country between American ideals and American practice in the pursuit of realizing the goals of the Declaration of Independence for all people. While attending to the distinct contributions that immigrants from various lands and of various creeds, along with Native Americans, have made to our nationhood, students should be taught above all the importance of our common citizenship and the imperative to treat all individuals with the respect for their dignity called for by the Declaration of Independence.

5. **Interdisciplinary Learning: Religion, Ethics, Philosophy, and Literature in History.** Students will describe and explain fundamental tenets of major world religions; basic ideals of ethics, including justice, consideration for others, and respect for human rights; differing conceptions of human nature; and influences over time of religion, ethics, and ideas of human nature in the arts, political and economic theories and ideologies, societal norms, education of the public, and the conduct of individual lives.

6. **Interdisciplinary Learning: Natural Science, Mathematics, and Technology in History.** Students will describe and explain major advances, discoveries, and inventions over time in natural science, mathematics, and technology; explain some of their effects and influences in the past and present on human life, thought, and health, including use of natural resources, production and distribution and consumption of goods, exploration, warfare, and communication.

Geography (*Framework*, pp. 66–67, 75, 94–101)

7. **Physical Spaces of the Earth.** Students will describe earth's natural features and their physical and biological characteristics; they will be able to visualize and map oceans and continents; mountain chains and rivers; forest, plain, and desert; resources both above and below ground; and conditions of climate and seasons.

8. **Places and Regions of the World.** Students will identify and explain the location and features of places and systems organized over time, including boundaries of nations and regions; cities and towns; capitals and commercial centers; roads, rails, and canals; dams, harbors, and fortifications; and routes of trade and invasion.

9. **The Effects of Geography.** Students will learn how physical environments have influenced particular cultures, economies, and political systems, and how geographic factors have affected population distribution, human migration, and other prehistoric and historical developments, such as agriculture, manufacturing, trade, and transportation.

10. **Human Alteration of Environments.** Students will describe the ways in which human activity has changed the world, such as removing natural barriers; transplanting some animal and plant species, and eliminating others; increasing or decreasing the fertility of land; and the mining of resources. They explain how science, technology, and institutions of many kinds have affected human capacity to alter environments.

Economics (*Framework*, pp. 68–71, 75–76, 102–117)

11. **Fundamental Economic Concepts.** Students will understand fundamental economic concepts, including choice, ownership, exchange, cooperation, competition, purposive effort, entrepreneurship, incentive, and money.

12. **Economic Reasoning.** Students will demonstrate understanding of supply and demand, price, labor markets, the costs of capital, factors affecting production, distribution, and consumption, relations among such factors, the nature of goods and services, incentives, financial markets, cost-benefit (including marginal cost-benefit) analysis, fairness, and the value of trade.

13. **American and Massachusetts Economic History.** Students will describe the development of the American economy, including Massachusetts and New England, from colonial times to the present.

14. **Today's Economy.** Students will describe the distinctive aspects of the contemporary economy of the United States and the world.

15. **Theories of Economy.** Students will describe and compare the major theories of economy, and will identify the individuals and historical circumstances in which these theories were developed.

Civics and Government *(Framework, pp. 72–73, 76–77, 118–130)*

16. **Authority, Responsibility, and Power.** Students will explain forms of authority in government and other institutions; explain purposes of authority and distinguish authority from mere power, as in "a government of laws, but not of men"; and describe responsible and irresponsible exercise of both authority and power.

17. **The Founding Documents.** Students will learn in progressively greater detail the content and the history of the Founding Documents of the United States—the Declaration of Independence, United States Constitution, and selected *Federalist* papers (as required by the Massachusetts Education Reform Act of 1993). They will assess the reasoning, purposes, and effectiveness of the documents; and, similarly, elements of the Constitution of the Commonwealth of Massachusetts.

18. **Principles and Practices of American Government.** Students will describe how the United States government functions at the local, state, national, and international levels, with attention to the Constitution of the Commonwealth of Massachusetts, its Declaration of the Rights of the Inhabitants, and the basic elements of its Frame of Government; analyze the background and evolution of constitutional and democratic government in the United States to the present day; and explain the place of institutions of government in securing the rights of citizens.

19. **Citizenship.** Students will learn the rights and duties of citizens and the principle of equal rights for all; consider the nature of civic virtue in a school, a community, a nation; and identify major obstacles and threats to civil rights.

20. **Forms of Government.** Students will study, compare, contrast, and analyze diverse forms of government; the ways of life and opportunities they permit, promote, and prohibit; and their effects on human rights. They will evaluate forms of government in terms of justice, ordered liberty, efficiency, public safety, educational opportunity, and economic and social mobility.

Curriculum Framework *Core Knowledge Topics* for Grade 5

The *History and Social Science Curriculum Framework* groups core knowledge topics into two categories: **The United States** and **The World**, and recommends a scope and sequence of instruction. In accordance with the *Framework*'s recommendations, MCAS tests grade 5 students on core knowledge topics from both categories, as listed below; however, no single annual MCAS administration will test all core knowledge topics from the grade 5 list.

Core knowledge topics are primarily assessed through questions linked with History strand learning standards. Each MCAS test item based on a History strand learning standard also assesses a core knowledge topic. Questions based on Geography, Economics, or Civics and Government strand learning standards are not necessarily linked to a core knowledge topic; those that assess only a learning standard are considered "stand alone" items. Questions within any single test session covered up to two core knowledge topic eras; these questions were not necessarily presented in chronological order. However, the sequence of questions from session to session generally progressed in chronological order by era.

The grade 5 History and Social Science core knowledge topics listed below are directly quoted from pages 13, 14, and 16 of the *Framework;* each topic is further subdivided on those *Framework* pages. Pages 24-50 of the *Framework* additionally list commonly taught subtopics for grade 5 students.

The United States

1. Early America and Americans (Beginnings to 1650)
2. Settlements, Colonies, and Emerging American Identity (1600 to 1763)
3. The American Revolution: Creating a New Nation (1750 to 1815)
4. Expansion, Reform, and Economic Growth (1800 to 1861)
5. The Civil War and Reconstruction (1850 to 1877)

The World

1. Human Beginnings and Early Civilizations (Prehistory to 1000 B.C.)
2. Classical Civilizations of the Ancient World (1000 B.C. to c. 500 A.D.)
3. Growth of Agricultural and Commercial Civilizations (500 to 1500 A.D.)[5]

MCAS Reporting Categories

In *Test Item Analysis Reports* and on the *Subject Area Subscore* pages of the MCAS *School* and *District Reports*, grade 5 History and Social Science test results are reported under the following five MCAS reporting categories:

- U.S. History
- World History
- Geography
- Economics
- Civics and Government

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[5] Grade 8 students are tested only on the first three subdivisions listed in the *Framework* under this core knowledge topic.

MCAS Spring 2002 Common Test Items History and Social Science, Grade 5

Test Sessions

MCAS grade 5 History and Social Science Student Test Booklets included 2 separate test sessions. Each session included multiple-choice and open-response questions.

Reference Materials and Tools

No reference materials or tools were allowed during any History and Social Science test session.

Cross-Reference Information

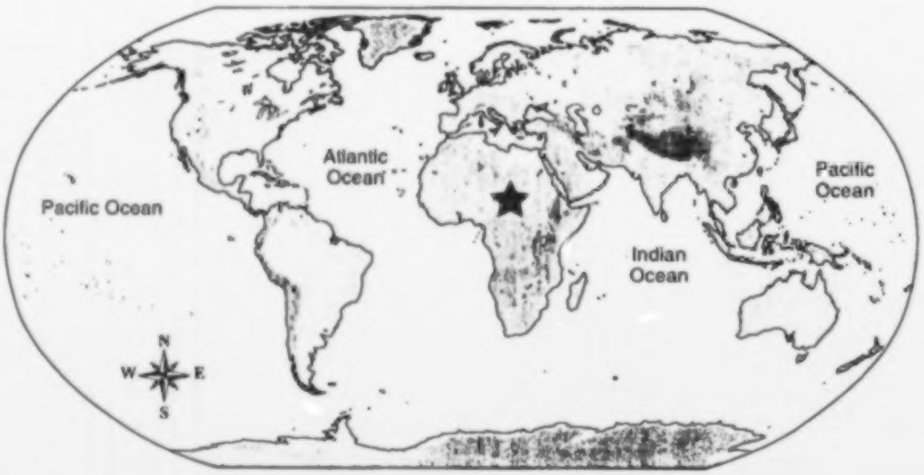
The shaded bar underneath each item indicates the item's MCAS reporting category, the *Framework* learning standard it assesses, and the core knowledge topic assessed by the item, if any. Items that do not assess a core knowledge topic ("stand alone" items) indicate "N/A" ("Not Applicable") in the appropriate line of their shaded bars.

History and Social Science, Grade 5

Session 1, Multiple-Choice Questions

Use the map below to answer question 1.

The World


Atlantic Ocean
Pacific Ocean
Pacific Ocean
Indian Ocean
N
W
E
S

(1) The continent marked with a star is

A. Europe.

B. Asia.

C. Australia.

D. Africa.

*Reporting Category/*Learning Standard for Item 1: ***Geography/Physical Spaces of the Earth***
Core Knowledge Topic: **N/A**

(2) Tutankhamen, Hatshepsut, and Ramses II were all rulers in ancient

A. India.

B. Egypt.

C. China.

D. Babylon.

Reporting Category/Learning Standard for Item 2: ***World History/Historical Understanding***
Core Knowledge Topic: **Human Beginnings and Early Civilizations (Prehistory to 1000 B.C.)**

(3) China, India, and a large part of Russia are all part of which continent?

A. Africa

B. Europe

C. Asia

D. South America

Reporting Category/Learning Standard for Item 3: ***Geography/Physical Spaces of the Earth***
Core Knowledge Topic: **N/A**

(4) The ancient Egyptians built pyramids as

A. places to store grain.

B. giant markers for travelers to follow.

C. forts from which to fight attackers.

D. tombs for dead pharaohs.

Reporting Category/Learning Standard for Item 4: ***World History/Historical Understanding***
Core Knowledge Topic: **Human Beginnings and Early Civilizations (Prehistory to 1000 B.C.)**

⑤ In which hemisphere are both North America and South America located?

A. northern

B. southern

C. eastern

D. western

*Reporting Category/*Learning Standard for Item 5: ***Geography/Physical Spaces of the Earth***
Core Knowledge Topic: **N/A**

Use the quotation below to answer question 6.

> "Food provider, bounty maker, who creates all that is good."
> — from an ancient Egyptian religious song

⑥ These words describe a river that gave the Egyptians water, food, and transportation. This river is the

A. Amazon.

B. Tigris.

C. Nile.

D. Euphrates.

*Reporting Category/*Learning Standard for Item 6: ***World History/Historical Understanding***
Core Knowledge Topic: **Human Beginnings and Early Civilizations (Prehistory to 1000 B.C.)**

⑦ Which civilization created ***hieroglyphic*** writing?

A. Chinese

B. Egyptian

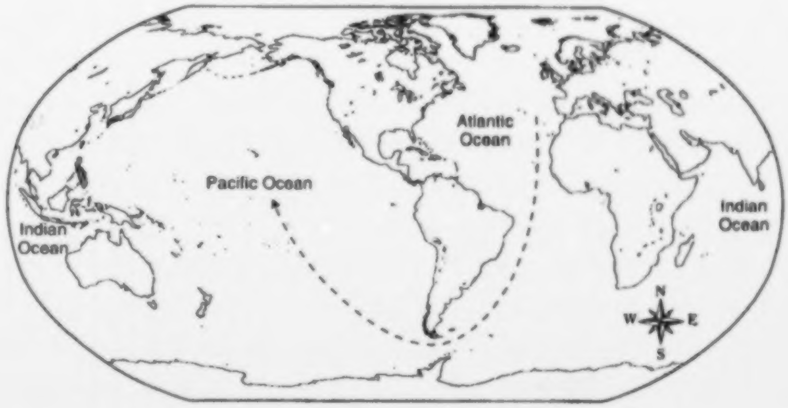
C. Indian

D. Mesopotamian

Reporting Category/Learning Standard for Item 7: ***World History/Historical Understanding***
Core Knowledge Topic: **Human Beginnings and Early Civilizations (Prehistory to 1000 B.C.)**

Use the map below to answer question 8.

The World



⑧ During the 1500s, explorers sailing from the Atlantic Ocean to the Pacific Ocean had to sail around which continent?

A. North America

B. Australia

C. South America

D. Europe

Reporting Category/Learning Standard for Item 8: ***Geography/The Effects of Geography***
Core Knowledge Topic: **Early America and Americans (Beginnings to 1650)**

⑨ When Columbus set out on his first voyage in 1492, he wanted to find a

A. shorter route to the Indies.

B. faster route around Africa.

C. new route to North and South America.

D. better route to Australia.

Reporting Category/Learning Standard for Item 9: ***World History/Chronology and Cause***
Core Knowledge Topic: **Early America and Americans (Beginnings to 1650)**

⑩ ***Democracy*** is a form of government. The word democracy means rule by

A. the people.

B. a king.

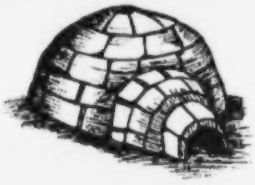
C. the nobles.

D. a dictator.

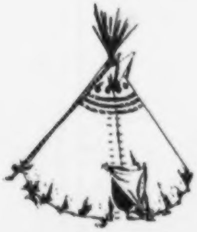
Reporting Category/Learning Standard for Item 10: ***Civics and Government/Forms of Government***
Core Knowledge Topic: **N/A**

⑪ Which picture shows the **most** common style of house used by Native Americans of the Eastern Woodlands?

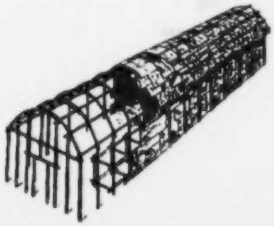
A.



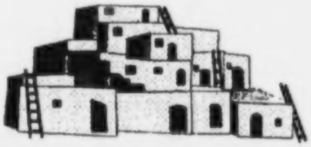
B.



C.



D.



*Reporting Category/*Learning Standard for Item 11: ***World History/Research, Evidence, and Point of View***
Core Knowledge Topic: **N/A**

Session 1, Open-Response Question

⑫ Between 9000 and 6000 B.C., nomadic people in Mesopotamia began to farm.

a. Identify **two** ways that farming changed the way the people of Mesopotamia lived.

b. Describe how **each** change affected their lives.

Reporting Category/Learning Standard for Item 12: **World History/Historical Understanding**
Core Knowledge Topic: **Human Beginnings and Early Civilizations (Prehistory to 1000 B.C.)**

Session 1, Multiple-Choice Questions

⑬ Which of the following was **not** one of the thirteen original colonies?

A. Ohio

B. New Jersey

C. Delaware

D. North Carolina

Reporting Category/Learning Standard for Item 13: ***U.S. History/Chronology and Cause***
Core Knowledge Topic: **Settlements, Colonies, and Emerging American Identity (1600 to 1763)**

⑭ The Puritans settled in Massachusetts for which of the following reasons?

A. to find gold

B. to set up trading posts

C. to gain religious freedom

D. to assist the Native Americans

Reporting Category/Learning Standard for Item 14: ***U.S. History/Historical Understanding***
Core Knowledge Topic: **Early America and Americans (Beginnings to 1650)**

⑮ During colonial times, what was the **most** important export of the southern colonies?

A. fish

B. tobacco

C. cloth

D. lumber

Reporting Category/Learning Standard for Item 15: ***U.S. History/Historical Understanding***
Core Knowledge Topic: **Settlements, Colonies, and Emerging American Identity (1600 to 1763)**

History and Social Science, Grade 5

⑯ Which of the following was an important food for the Plains Indians?

A. cranberries

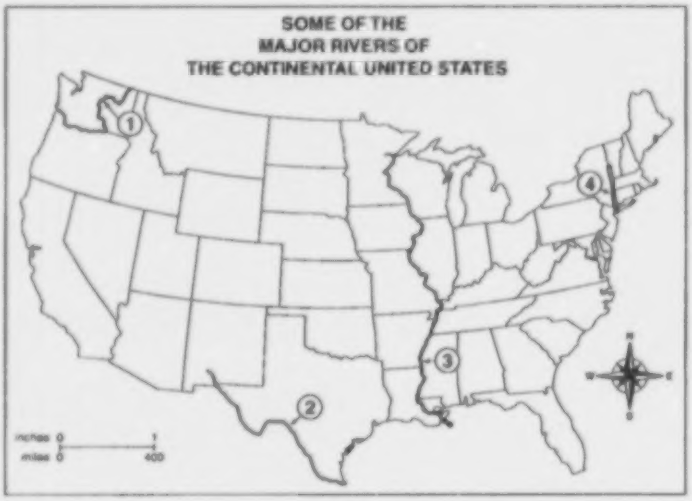
B. whale blubber

C. buffalo meat

D. rice

Reporting Category/Learning Standard for Item 16: ***U.S. History/Historical Understanding***
Core Knowledge Topic: **Early America and Americans (Beginnings to 1650)**

Use the map below to answer question 17.


SOME OF THE
MAJOR RIVERS OF
THE CONTINENTAL UNITED STATES
1
2
3
4
N
E
S
W
inches 0 1
miles 0 400

⑰ The number 3 on the map locates which river?

A. Columbia

B. Mississippi

C. Rio Grande

D. Hudson

Reporting Category/Learning Standard for Item 17: ***Geography/Places and Regions of the World***
Core Knowledge Topic: **N/A**

⑱ The Great Plains region of the United States is an example of a

A. forest.

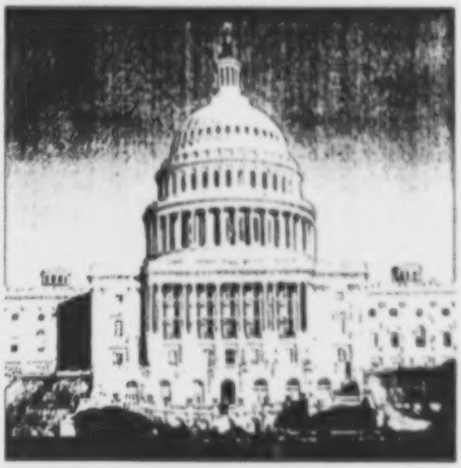
B. grassland.

C. swamp.

D. desert.

Reporting Category/Learning Standard for Item 18: ***Geography/Physical Spaces of the Earth***
Core Knowledge Topic: **N/A**

Use the photograph below to answer question 19.



⑲ This is a photograph of which national landmark?

A. Vietnam Memorial

B. Washington Monument

C. U.S. Capitol Building

D. Lincoln Memorial

Reporting Category/Learning Standard for Item 19: ***Civics and Government/Principles and Practices of American Government***
Core Knowledge Topic: **N/A**

History and Social Science, Grade 5

Session 1, Open-Response Questions

⑳ The words in quotations below come from important documents in America's history.

1. "We hold these Truths to be self-evident, that all Men are created equal . . ."
2. "WE the PEOPLE of the UNITED STATES, in order to form a more perfect union . . ."

Choose **one** quotation to answer parts a, b, and c.

a. Write the number of the quotation you have chosen.

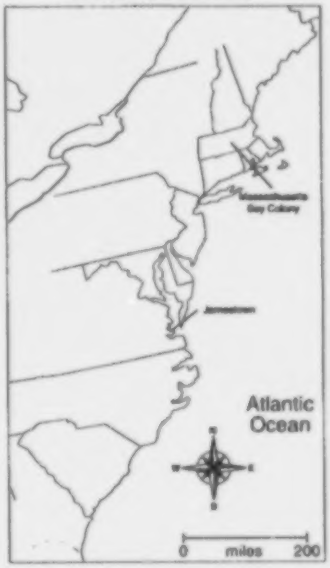
b. Name the document the quotation comes from.

c. Explain why this document is important in American history.

Reporting Category/Learning Standard for Item 20: ***U.S. History/Research, Evidence, and Point of View***
Core Knowledge Topic: **N/A**

Use the map below to answer question 21.

EARLY COLONIES



㉑ Jamestown, Virginia was settled in 1607. The Massachusetts Bay Colony was established in 1630.

Use **two** of the following topics to compare these early colonies.

- climate
- religion
- geographic features
- reasons for settling
- crops

You may make a chart or table to answer this question.

*Reporting Category/*Learning Standard for Item 21: ***U.S. History/Historical Understanding***
Core Knowledge Topic: **Settlements, Colonies, and Emerging American Identity (1600 to 1763)**

Session 2, Multiple-Choice Questions

(22) Anne Hutchinson was forced out of the Massachusetts Bay Colony because of her

A. education of Native Americans.

B. religious teachings.

C. efforts to overthrow leaders.

D. loyalty to England.

Reporting Category/Learning Standard for Item 22: ***U.S. History/Society, Diversity, Commonality and the Individual***
Core Knowledge Topic: **Expansion, Reform, and Economic Growth (1800 to 1861)**

(23) During the 1700s, one of the **most** important economic activities for New England was

A. making pottery.

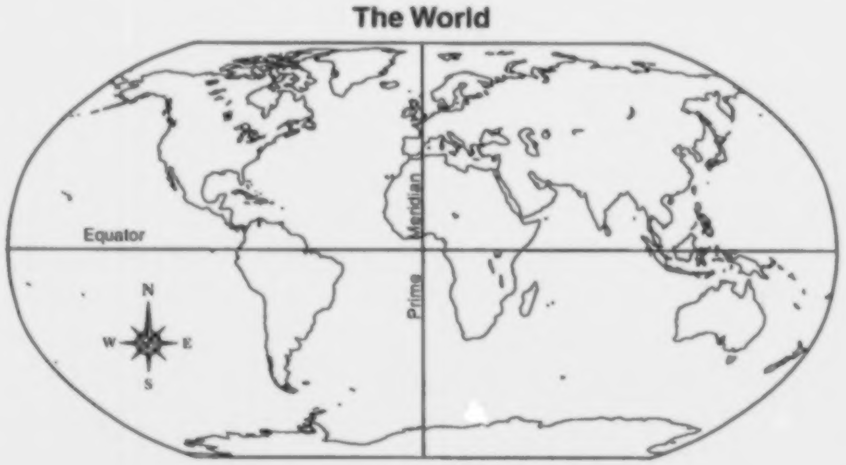
B. constructing canals.

C. building ships.

D. blowing glass.

Reporting Category/Learning Standard for Item 23: ***Economics/American and Massachusetts Economic History***
Core Knowledge Topic: **Settlements, Colonies, and Emerging American Identity (1600 to 1763)**

Use the map below to answer question 24.



(24) Which of the continents listed below has all of its land area in **both** the Eastern and Southern Hemispheres?

A. North America

B. Australia

C. South America

D. Europe

*Reporting Category/*Learning Standard for Item 24: ***Geography/Physical Spaces of the Earth***
Core Knowledge Topic: **N/A**

Use the statements in the box below to answer question 25.

- He was an inventor of the lightning rod.
- He was the Deputy Postmaster General.
- He was the publisher of *Poor Richard's Almanac*.

(25) Who was he?

A. Thomas Jefferson

B. Alexander Hamilton

C. James Madison

D. Benjamin Franklin

*Reporting Category/*Learning Standard for Item 25: ***U.S. History/Historical Understanding***
Core Knowledge Topic: **Settlements, Colonies, and Emerging American Identity (1600 to 1763)**

(26) The national holiday celebrated in the United States on July 4th is known as

A. Flag Day.

B. Independence Day.

C. Veterans Day.

D. Memorial Day.

*Reporting Category/*Learning Standard for Item 26: ***U.S. History/Historical Understanding***
Core Knowledge Topic: **Settlements, Colonies, and Emerging American Identity (1600 to 1763)**

(27) On March 5, 1770, British soldiers fired upon a crowd in Boston, killing five colonists and wounding a dozen others. This event is known as the

A. Battle of Bunker Hill.

B. Boston Tea Party.

C. Battle of Lexington and Concord.

D. Boston Massacre.

*Reporting Category/*Learning Standard for Item 27: ***U.S. History/Historical Understanding***
Core Knowledge Topic: **Settlements, Colonies, and Emerging American Identity (1600 to 1763)**

(28) On April 19, 1775 the American Revolution began with fighting in which colony?

A. Virginia

B. Massachusetts

C. New York

D. Pennsylvania

*Reporting Category/*Learning Standard for Item 28: ***U.S. History/Historical Understanding***
Core Knowledge Topic: **The American Revolution: Creating a New Nation (1750 to 1815)**

(29) In April 1775, William Dawes and Paul Revere helped to spread news about the

A. signing of the Declaration of Independence.

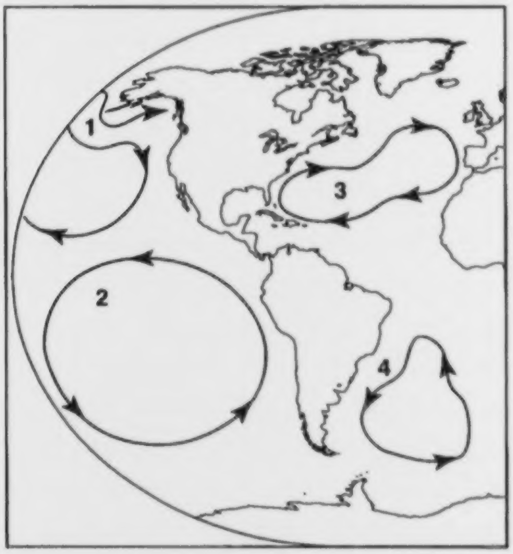
B. British march on Lexington and Concord.

C. American victory at Yorktown.

D. British capture of Bunker Hill.

*Reporting Category/*Learning Standard for Item 29: ***U.S. History/Historical Understanding***
Core Knowledge Topic: **The American Revolution: Creating a New Nation (1750 to 1815)**

Use the map below to answer question 30.



Ⓐ Which of the numbers on the map marks the Gulf Stream current?

A. 1

B. 2

C. 3

D. 4

*Reporting Category/*Learning Standard for Item 30: ***Geography/Physical Spaces of the Earth***
Core Knowledge Topic: **N/A**

History and Social Science, Grade 5

Session 2, Open-Response Question

(31) Rivers have played an important part in history. They have often influenced where and how people live.

a. Choose a river that you have studied.

b. Identify this river and the continent on which it is located.

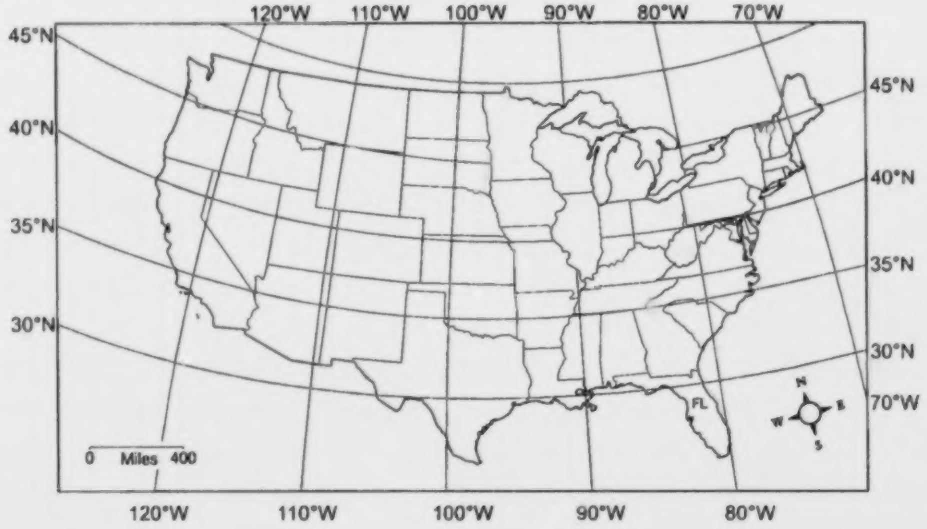
c. Describe **one** way this river has influenced the lives of the people living near it.

*Reporting Category/*Learning Standard for Item 31. ***Geography/Physical Spaces of the Earth***
Core Knowledge Topic: **N/A**

Session 2, Multiple-Choice Questions

Use the map below to answer question 32.

The Continental United States


120°W
110°W
100°W
90°W
80°W
70°W
45°N
40°N
35°N
30°N
45°N
40°N
35°N
30°N
70°W
FL
N
E
S
W
0 Miles 400
120°W
110°W
100°W
90°W
80°W

(32) Which degree of latitude runs through Florida?

A. 40 degrees North

B. 30 degrees North

C. 30 degrees South

D. 40 degrees South

*Reporting Category/*Learning Standard for Item 32: ***Geography/Physical Spaces of the Earth***
Core Knowledge Topic: **N/A**

(33) Who was the **main** author of the Declaration of Independence?

A. Thomas Jefferson

B. George Washington

C. Thomas Paine

D. John Adams

Reporting Category/Learning Standard for Item 33: ***U.S. History/Historical Understanding***
Core Knowledge Topic: **The American Revolution: Creating a New Nation (1750 to 1815)**

(34) In the American Revolution, who were the minutemen?

A. American colonists who fought in the British army

B. British soldiers who were the best in their army

C. American colonists who fought for independence

D. British soldiers who wished to return to Great Britain

Reporting Category/Learning Standard for Item 34: ***U.S. History/Historical Understanding***
Core Knowledge Topic: **The American Revolution: Creating a New Nation (1750 to 1815)**

(35) Which of the following people led the Continental army?

A. Benjamin Franklin

B. Thomas Jefferson

C. George Washington

D. John Hancock

Reporting Category/Learning Standard for Item 35: ***U.S. History/Historical Understanding***
Core Knowledge Topic: **Settlements, Colonies, and Emerging American Identity (1600 to 1763)**

(36) The battle that ended the Revolutionary War was the Battle of

A. Bunker Hill.

B. Trenton.

C. Saratoga.

D. Yorktown.

Reporting Category/Learning Standard for Item 36: ***U.S. History/Historical Understanding***
Core Knowledge Topic: **The American Revolution: Creating a New Nation (1750 to 1815)**

(37) According to the Constitution, the laws of the United States are passed by the

A. Congress.

B. President.

C. Supreme Court.

D. Secretary of State.

Reporting Category/Learning Standard for Item 37: ***Civics and Government/Principles and Practices of American Government***
Core Knowledge Topic: **N/A**

Use the quotation below to answer question 38.

> We the People of the United States, in Order to form a more perfect Union, establish Justice, insure domestic Tranquility, provide for the common defence, promote the general Welfare, and secure the Blessings of Liberty to ourselves and our Posterity, do ordain and establish...

㊳ The above quotation is taken from the Preamble to the

A. Constitution.

B. Mayflower Compact.

C. Articles of Confederation.

D. Declaration of Independence.

Reporting Category/Learning Standard for Item 38: ***Civics and Government/The Founding Documents***
Core Knowledge Topic: **N/A**

History and Social Science, Grade 5

Session 2, Open-Response Question

39 Dr. Martin Luther King, Jr. gave a famous speech in 1963. In his speech, Dr. King said,

"I have a dream that my four little children will one day live in a nation where they will not be judged by the color of their skin, but by the content of their character."

a. Tell who Dr. Martin Luther King, Jr. was. Be sure to use specific details in your answer.

b. In your own words, explain what he meant in the statement above. Be sure to use specific details in your answer.

c. Explain his importance in United States history. Be sure to use specific details in your answer.

Reporting Category/Learning Standard for Item 39: ***Civics and Government/Citizenship***
Core Knowledge Topic: **The Contemporary United States (1945 to the Present)**

XIII. History and Social Science, Grade 8

History and Social Science, Grade 8

The spring 2002 Grade 8 MCAS History and Social Science test was based on the learning standards and core knowledge topics of the Massachusetts *History and Social Science Curriculum Framework* (1997). Each test question assessed students' knowledge, concepts, and reasoning related to a specific learning standard; most questions also assessed knowledge, concepts, and reasoning related to a particular core knowledge topic.

Curriculum Framework *Learning Standards*

The *Framework* identifies four major study strands:

- History
- Geography
- Economics
- Civics and Government

The learning standards for each study strand are listed below and are directly quoted from the *Framework*; applicable *Framework* page numbers are shown in parentheses.

History (*Framework*, pp. 64–65, 74–75, 78–93)

1. **Chronology and Cause.** Students will understand the chronological order of historical events and recognize the complexity of historical cause and effect, including the interaction of forces from different spheres of human activity, the importance of ideas, and of individual choices, actions, and character.

2. **Historical Understanding.** Students will understand the meaning, implications, and import of historical events, while recognizing the contingency and unpredictability of history—how events could have taken other directions—by studying past ideas as they were thought, and past events as they were lived, by people of the time.

3. **Research, Evidence, and Point of View.** Students will acquire the ability to frame questions that can be answered by historical study and research; to collect, evaluate, and employ information from primary and secondary sources, and to apply it in oral and written presentations. They will understand the many kinds and uses of evidence; and by comparing competing historical narratives, they will differentiate historical fact from historical interpretation and from fiction.

4. **Society, Diversity, Commonality, and the Individual.** As a vast nation, the overwhelming majority of whose population derives from waves of immigration from many lands, the United States has a citizenry that exhibits a broad diversity in terms of race, ethnic traditions, and religious beliefs. The history of the United States exhibits perhaps the most important endeavor to establish a civilization founded on the principles that all people are created equal, that it is the purpose of government to secure the inalienable rights of all individuals, and that government derives "its just powers from the consent of the governed." It is also true, however, that federal, state, and local governments, as well as the people themselves, have often fallen short in practice of actualizing these high ideals, the most egregious violation being the acceptance of slavery in some states until the Civil War. Students should be expected to learn of the complex interplay that has existed from the beginning of our country between American ideals and American practice in the pursuit of realizing the goals of the Declaration of Independence for all people. While attending to the distinct contributions that immigrants from various lands and of various creeds, along with Native Americans, have made to our nationhood, students should be taught above all the importance of our common citizenship and the imperative to treat all individuals with the respect for their diginity called for by the Declaration of Independence.

5. **Interdisciplinary Learning: Religion, Ethics, Philosophy, and Literature in History.** Students will describe and explain fundamental tenets of major world religions; basic ideals of ethics, including justice, consideration for others, and respect for human rights; differing conceptions of human nature; and influences over time of religion, ethics, and ideas of human nature in the arts, political and economic theories and ideologies, societal norms, education of the public, and the conduct of individual lives.

6. **Interdisciplinary Learning: Natural Science, Mathematics, and Technology in History.** Students will describe and explain major advances, discoveries, and inventions over time in natural science, mathematics, and technology; explain some of their effects and influences in the past and present on human life, thought, and health, including use of natural resources, production and distribution and consumption of goods, exploration, warfare, and communication.

Geography (*Framework*, pp. 66–67, 75, 94–101)

7. **Physical Spaces of the Earth.** Students will describe earth's natural features and their physical and biological characteristics; they will be able to visualize and map oceans and continents; mountain chains and rivers; forest, plain, and desert; resources both above and below ground; and conditions of climate and seasons.

8. **Places and Regions of the World.** Students will identify and explain the location and features of places and systems organized over time, including boundaries of nations and regions; cities and towns; capitals and commercial centers; roads, rails, and canals; dams, harbors, and fortifications; and routes of trade and invasion.

9. **The Effects of Geography.** Students will learn how physical environments have influenced particular cultures, economies, and political systems, and how geographic factors have affected population distribution, human migration, and other prehistoric and historical developments, such as agriculture, manufacturing, trade, and transportation.

10. **Human Alteration of Environments.** Students will describe the ways in which human activity has changed the world, such as removing natural barriers; transplanting some animal and plant species, and eliminating others; increasing or decreasing the fertility of land; and the mining of resources. They explain how science, technology, and institutions of many kinds have affected human capacity to alter environments.

Economics (*Framework*, pp. 68–71, 75–76, 102–117)

11. **Fundamental Economic Concepts.** Students will understand fundamental economic concepts, including choice, ownership, exchange, cooperation, competition, purposive effort, entrepreneurship, incentive, and money.

12. **Economic Reasoning.** Students will demonstrate understanding of supply and demand, price, labor markets, the costs of capital, factors affecting production, distribution, and consumption, relations among such factors, the nature of goods and services, incentives, financial markets, cost-benefit (including marginal cost-benefit) analysis, fairness, and the value of trade.

13. **American and Massachusetts Economic History.** Students will describe the development of the American economy, including Massachusetts and New England, from colonial times to the present.

14. **Today's Economy.** Students will describe the distinctive aspects of the contemporary economy of the United States and the world.

15. **Theories of Economy.** Students will describe and compare the major theories of economy, and will identify the individuals and historical circumstances in which these theories were developed.

Civics and Government *(Framework,* pp. 72–73, 76–77, 118–130)

16. **Authority, Responsibility, and Power.** Students will explain forms of authority in government and other institutions; explain purposes of authority and distinguish authority from mere power, as in "a government of laws, but not of men"; and describe responsible and irresponsible exercise of both authority and power.

17. **The Founding Documents.** Students will learn in progressively greater detail the content and history of the Founding Documents of the United States—the Declaration of Independence, United States Constitution, and selected *Federalist* papers (as required by the Massachusetts Education Reform Act of 1993). They will assess the reasoning, purposes, and effectiveness of the documents; and, similarly, elements of the Constitution of the Commonwealth of Massachusetts.

18. **Principles and Practices of American Government.** Students will describe how the United States government functions at the local, state, national, and international levels, with attention to the Constitution of the Commonwealth of Massachusetts, its Declaration of the Rights of the Inhabitants, and the basic elements of its Frame of Government; analyze the background and evolution of constitutional and democratic government in the United States to the present day; and explain the place of institutions of government in securing the rights of citizens.

19. **Citizenship.** Students will learn the rights and duties of citizens and the principle of equal rights for all; consider the nature of civic virtue in a school, a community, a nation; and identify major obstacles and threats to civil rights.

20. **Forms of Government.** Students will study, compare, contrast, and analyze diverse forms of government; the ways of life and opportunities they permit, promote, and prohibit; and their effects on human rights. They will evaluate forms of government in terms of justice, ordered liberty, efficiency, public safety, educational opportunity, and economic and social mobility.

Curriculum Framework *Core Knowledge Topics* for Grade 8

The *History and Social Science Curriculum Framework* groups core knowledge topics into two categories: **The United States** and **The World**, and recommends a scope and sequence of instruction. In accordance with the *Framework*'s recommendations, MCAS tests grade 8 students on core knowledge topics from both categories, as listed below; however, no single annual MCAS administration will test **all** core knowledge topics from the grade 8 list.

Core knowledge topics are primarily assessed through questions linked with History strand learning standards. Each MCAS test item based on a History strand learning standard also assesses a core knowledge topic. Questions based on Geography, Economics, or Civics and Government strand learning standards are not necessarily linked to a core knowledge topic; those that assess only a learning standard are considered "stand alone" items. Questions within any single test session covered up to two core knowledge topic eras; these questions were not necessarily presented in chronological order. However, the sequence of questions from session to session generally progressed in chronological order by era.

The grade 8 History and Social Science core knowledge topics listed below are directly quoted from pages 13, 14, and 16 of the *Framework;* each topic is further subdivided on those *Framework* pages. Pages 24-50 of the *Framework* additionally list commonly taught subtopics for grade 8 students.

The United States

1. Early America and Americans (Beginnings to 1650)
2. Settlements, Colonies, and Emerging American Identity (1600 to 1763)
3. The American Revolution: Creating a New Nation (1750 to 1815)
4. Expansion, Reform, and Economic Growth (1800 to 1861)
5. The Civil War and Reconstruction (1850 to 1877)

The World

1. Human Beginnings and Early Civilizations (Prehistory to 1000 B.C.)
2. Classical Civilizations of the Ancient World (1000 B.C. to c. 500 A.D.)
3. Growth of Agricultural and Commercial Civilizations (500 to 1500 A.D.)[6]

MCAS Reporting Categories

In *Test Item Analysis Reports* and on the *Subject Area Subscore* pages of the MCAS *School* and *District Reports,* grade 8 History and Social Science test results are reported under the following five MCAS reporting categories:

- U.S. History
- World History
- Geography
- Economics
- Civics and Government

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[6] Grade 8 students are tested only on the first three subdivisions listed in the *Framework* under this core knowledge topic.

MCAS Spring 2002 Common Test Items
History and Social Science, Grade 8

Test Sessions

MCAS grade 8 History and Social Science Student Test Booklets included 2 separate test sessions. Each session included multiple-choice and open-response questions.

Reference Materials and Tools

No reference materials or tools were allowed during any History and Social Science test session.

Cross-Reference Information

The shaded bar underneath each item indicates the item's MCAS reporting category, the *Framework* learning standard it assesses, and the core knowledge topic assessed by the item, if any. Items that do not assess a core knowledge topic ("stand alone" items) indicate "N/A" ("Not Applicable") in the appropriate line of their shaded bars.

History and Social Science, Grade 8

Session 1, Multiple-Choice Questions

① On which continent did the teachings of Hinduism, Buddhism, and Confucianism begin?

A. South America

B. Asia

C. Africa

D. Europe

*Reporting Category/*Learning Standard for Item 1: ***World History/Historical Understanding***
Core Knowledge Topic: **Classical Civilizations of the Ancient World (1000 B.C. to c. 500 A.D.)**

② Which of the following distinguished Judaism from **most** other early religions that preceded it?

A. There was a place set aside for worship.

B. Only one god was worshiped.

C. No formal religious training was required of religious leaders.

D. There was a code of ethical behavior.

*Reporting Category/*Learning Standard for Item 2: ***World History/Historical Understanding***
Core Knowledge Topic: **Classical Civilizations of the Ancient World (1000 B.C. to c. 500 A.D.)**

③ Which civilization produced the philosophers Aristotle, Plato, and Socrates?

A. Chinese

B. Egyptian

C. Roman

D. Greek

*Reporting Category/*Learning Standard for Item 3: ***World History/Interdisciplinary Learning: Religion, Ethics, Philosophy, and Literature***
Core Knowledge Topic: **Classical Civilizations of the Ancient World (1000 B.C. to c. 500 A.D.)**

④ In the Roman republic

A. all people were members of the legislative assembly.

B. certain citizens elected representatives

C. all men and women were allowed to vote.

D. service in the military was mandatory for all people.

Reporting Category/Learning Standard for Item 4: ***World History/Historical Understanding***
Core Knowledge Topic: **Classical Civilizations of the Ancient World (1000 B.C. to c. 500 A.D.)**

⑤ All of the following contributed to the decline and fall of the Roman Empire **except**

A. the collapse of the Roman economy.

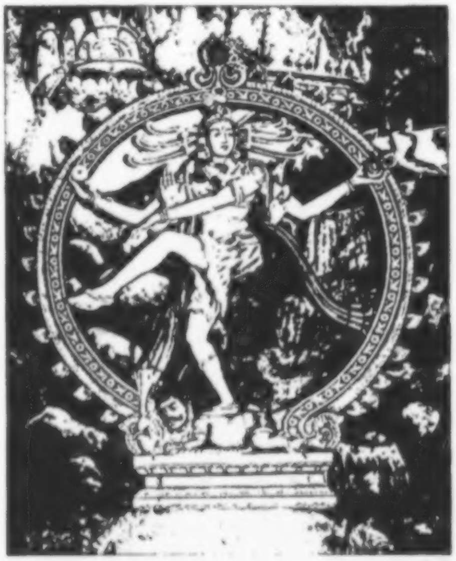
B. incompetent leaders.

C. the lack of a navy.

D. an invasion of Rome by the Visigoths.

Reporting Category/Learning Standard for Item 5: ***World History/Historical Understanding***
Core Knowledge Topic: **Classical Civilizations of the Ancient World (1000 B.C. to c. 500 A.D.)**

Use the illustration below to answer question 6.



⑥ With which religion is this sculpture associated?

A. Hinduism

B. Buddhism

C. Shintoism

D. Taoism

*Reporting Category/*Learning Standard for Item 6: ***World History/Interdisciplinary Learning: Religion, Ethics, Philosophy, and Literature***

Core Knowledge Topic: **Classical Civilizations of the Ancient World (1000 B.C. to c. 500 A.D.)**

⑦ Two civilizations that practiced some form of democracy were

A. Egypt and Greece.

B. Mesopotamia and Rome.

C. Greece and Rome.

D. Mesopotamia and Egypt.

Reporting Category/Learning Standard for Item 7: ***World History/Interdisciplinary Learning: Religion, Ethics, Philosophy, and Literature***
Core Knowledge Topic: **Classical Civilizations of the Ancient World (1000 B.C. to c. 500 A.D.)**

⑧ Homer's epic poem *The Iliad* is about

A. Hebrew bondage in Egypt.

B. the invasion of Troy.

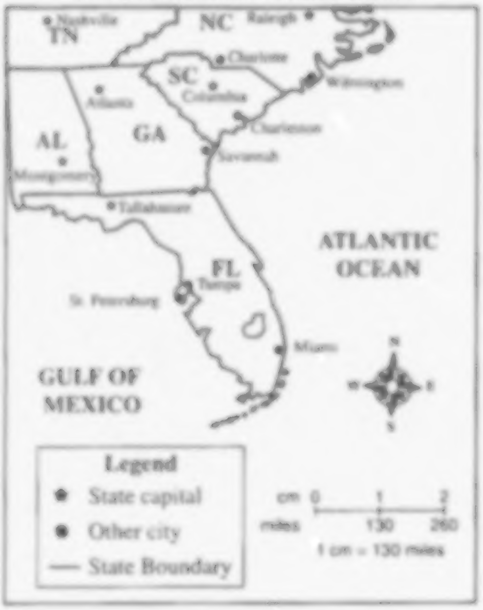
C. the destruction of Rome.

D. Alexander the Great's conquests.

Reporting Category/Learning Standard for Item 8: ***World History/Interdisciplinary Learning: Religion, Ethics, Philosophy, and Literature***
Core Knowledge Topic: **Classical Civilizations of the Ancient World (1000 B.C. to c. 500 A.D.)**

Use the map below to answer question 9.

The Southeastern United States


Nashville
TN
NC
Raleigh
Charlotte
SC
Columbia
Wilmington
Atlanta
GA
AL
Montgomery
Charleston
Savannah
Tallahassee
ATLANTIC
OCEAN
FL
Tampa
St. Petersburg
Miami
GULF OF
MEXICO
N
W
E
S
Legend
State capital
Other city
State Boundary
cm 0 1 2
miles 130 260
1 cm = 130 miles

⑨ Which type of map is shown above?

A. physical

B. political

C. economic

D. cultural

Reporting Category/Learning Standard for Item 9: ***Geography/Physical Spaces of the Earth***
Core Knowledge Topic: **N/A**

⑩ Which of the following **best** explains the meaning of democracy?

A. Citizens participate either directly or indirectly in the governing process.

B. The government consists of executive, judicial, and legislative branches.

C. Powers are divided between the state and federal governments.

D. The government controls business and industry.

Reporting Category/Learning Standard for Item 10: ***Civics and Government/Principles and Practices of American Government***

Core Knowledge Topic: **N/A**

⑪ High altitude winds move storms and create weather patterns. These winds are known as

A. jet streams.

B. Gulf Streams.

C. prevailing westerlies.

D. doldrums.

Reporting Category/Learning Standard for Item 11: ***Geography/Physical Spaces of the Earth***

Core Knowledge Topic: **N/A**

Session 1, Open-Response Question

⑫ The United States Constitution guarantees all citizens certain rights that legally cannot be taken away. United States citizens also have certain responsibilities that they should fulfill in order to make the country a better place to live.

a. Name **two** rights guaranteed to all citizens by the United States Constitution.

b. Explain the importance of **each** of these rights in a democratic society. Be sure to support your answer with specific examples.

c. Name **one** responsibility that United States citizens should fulfill in a democratic society.

d. Explain the importance of fulfilling the responsibility identified in part c. Be sure to support your answer with specific examples.

Reporting Category/Learning Standard for Item 12: ***Civics and Government/Forms of Government***
Core Knowledge Topic: **The American Revolution: Creating a New Nation (1750 to 1815)**

Session 1, Multiple-Choice Questions

13 Who was the leader of the farmers' rebellion in western Massachusetts from 1786 to 1787?

A. John Carver

B. William Bradford

C. Daniel Boone

D. Daniel Shays

Reporting Category/Learning Standard for Item 13: ***U.S. History/Historical Understanding***
Core Knowledge Topic: **The American Revolution: Creating a New Nation (1750 to 1815)**

14 There was much disagreement over the Constitution when it was completed and signed in 1787. Many people felt it could not protect the rights for which many Americans had fought. As a compromise, which of the following was added to the Constitution?

A. Preamble

B. Bill of Rights

C. Articles of Confederation

D. Declaration of Independence

Reporting Category/Learning Standard for Item 14: ***U.S. History/Historical Understanding***
Core Knowledge Topic: **The American Revolution: Creating a New Nation (1750 to 1815)**

15 According to the United States Constitution,

A. there can be no more than two political parties.

B. there must be more than two political parties.

C. only the president has the power to approve treaties.

D. a single term of the president is four years.

Reporting Category/Learning Standard for Item 15: ***Civics and Government/The Founding Documents***
Core Knowledge Topic: **The American Revolution: Creating a New Nation (1750 to 1815)**

⑯ The Constitution states that senators and representatives elected to the United States Congress

A. control the military forces.

B. conduct foreign affairs.

C. make laws for the nation.

D. collect taxes from people.

Reporting Category/Learning Standard for Item 16: ***U.S. History/Historical Understanding***
Core Knowledge Topic: **The American Revolution: Creating a New Nation (1750 to 1815)**

⑰ Judicial review establishes the power of the Supreme Court to

A. limit the terms of judges.

B. determine the constitutionality of laws.

C. ratify presidential appointments.

D. impose mandatory criminal sentences.

Reporting Category/Learning Standard for Item 17: ***Civics and Government/Authority, Responsibility and Power***
Core Knowledge Topic: **N/A**

⑱ In a presidential election, the number of electoral votes for each state is determined by its

A. voter turnout in previous presidential elections.

B. number of registered voters.

C. state constitution.

D. number of United States representatives and senators.

Reporting Category/Learning Standard for Item 18: ***Civics and Government/Citizenship***
Core Knowledge Topic: **N/A**

⑲ Which of the following provided for a two-house legislature in the United States government?

A. Articles of Confederation

B. Federalist Papers

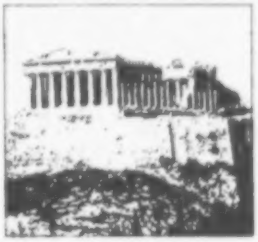
C. U.S. Constitution

D. Declaration of Independence

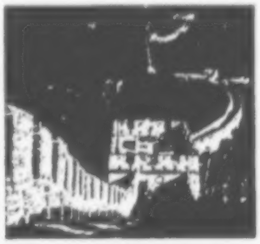
Reporting Category/Learning Standard for Item 19: ***U.S. History/Historical Understanding***
Core Knowledge Topic: **N/A**

Session 1, Open-Response Questions

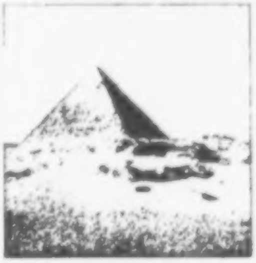
⑳ Pictured below are four structures built by different civilizations. Study the pictures to answer the questions that follow.



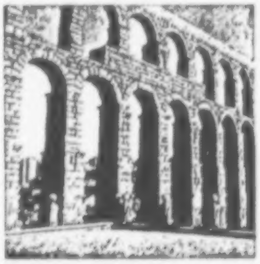
Picture 1



Picture 3



Picture 2



Picture 4

a. Select **two** pictures, write the number of each picture you selected, and tell what the structure in each picture you selected is called.

b. Explain the importance of **both** structures you selected to the lives of the people who lived in that civilization.

Reporting Category/Learning Standard for Item 20: ***World History/Historical Understanding***
Core Knowledge Topic: **Classical Civilizations of the Ancient World (1000 B.C. to c. 500 A.D.)**

㉑ There have been leaders throughout history who contributed to the betterment of society but who were not elected officials. For example, Sojourner Truth was a leader in the anti-slavery movement yet held no elected office.

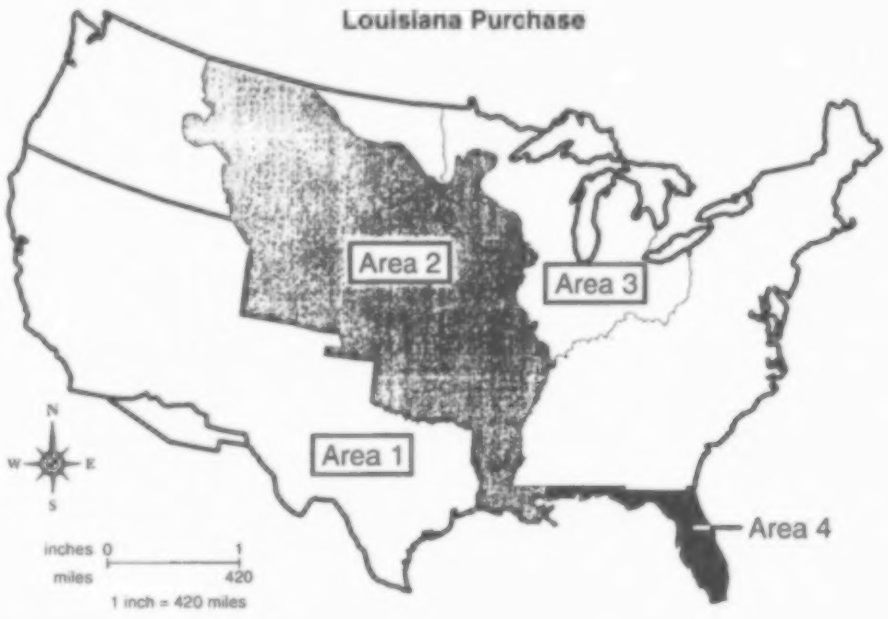
a. Select one American, **other** than Sojourner Truth, who worked to improve society and who was **not** an elected official.

b. Describe who the person was, what the person did, when the person lived, and the person's contribution to society.

Reporting Category/Learning Standard for Item 21: ***Civics and Government/Citizenship***
Core Knowledge Topic: **Expansion, Reform, and Economic Growth (1800 to 1861)**

Session 2, Multiple-Choice Questions

Use the map below to answer question 22.


Louisiana Purchase
Area 2
Area 3
Area 1
Area 4
N
W
E
S
inches 0
1
miles
420
1 inch = 420 miles

㉒ Which area on the map was acquired in 1803 during Thomas Jefferson's presidency?

A. Area 1

B. Area 2

C. Area 3

D. Area 4

Reporting Category/Learning Standard for Item 22: ***U.S. History/Research, Evidence, and Point of View***

Core Knowledge Topic: **The American Revolution: Creating a New Nation (1750 to 1815)**

㉓ Which of the following established a major trade route from New York to the West in 1825?

A. Erie Canal

B. Cumberland Road

C. Transcontinental Railroad

D. Independence Trail

*Reporting Category/*Learning Standard for Item 23: ***Economics/American and Massachusetts Economic History***
Core Knowledge Topic: **Expansion, Reform, and Economic Growth (1800 to 1861)**

㉔ Which president refused to enforce the Supreme Court ruling in the 1830s that supported the Cherokee nation's claim to remain on its land?

A. John Quincy Adams

B. Andrew Jackson

C. James Monroe

D. James Buchanan

*Reporting Category/*Learning Standard for Item 24: ***U.S. History/Historical Understanding***
Core Knowledge Topic: **Expansion, Reform, and Economic Growth (1800 to 1861)**

Use the list of historical figures below to answer question 25.

- Horace Mann
- Elizabeth Ann Seton
- Noah Webster
- Emma Willard

(25) These people are known for their work in

A. education.

B. business.

C. western expansion.

D. international affairs.

Reporting Category/Learning Standard for Item 25: ***U.S. History/Historical Understanding***
Core Knowledge Topic: **Expansion, Reform, and Economic Growth (1800 to 1861)**

(26) Samuel Slater is credited with the development of the

A. first textile mill in the United States.

B. technology for building the Erie Canal.

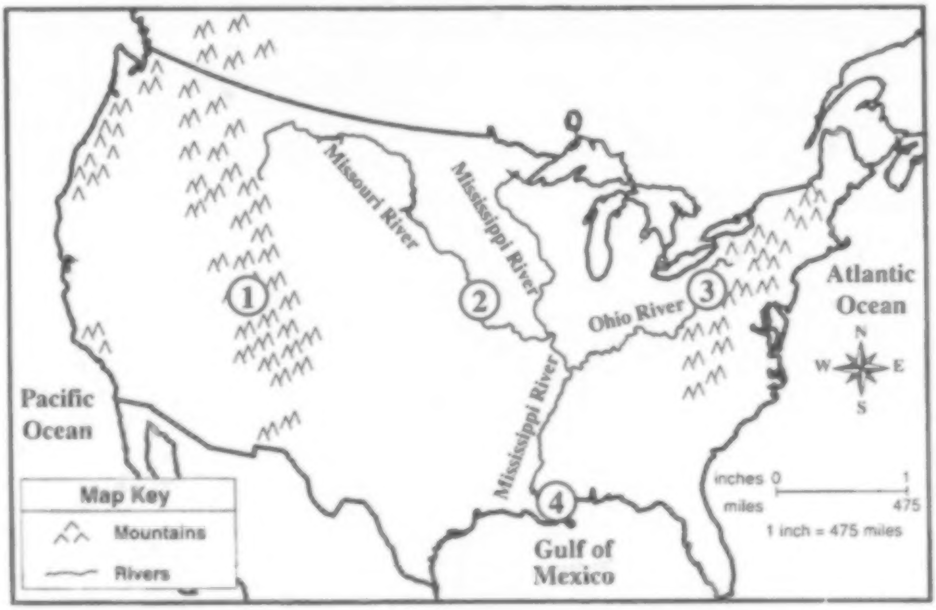
C. first banking system in the United States.

D. use of interchangeable machine parts.

Reporting Category/Learning Standard for Item 26: ***Economics/American and Massachusetts Economic History***
Core Knowledge Topic: **Expansion, Reform, and Economic Growth (1800 to 1861)**

Use this map to answer question 27.

The Continental United States


Missouri River
Mississippi River
Ohio River
Mississippi River
1
2
3
4
Pacific Ocean
Atlantic Ocean
Gulf of Mexico
N
W
E
S
inches 0 1
miles 475
1 inch = 475 miles
Map Key
Mountains
Rivers

27 Which number on the map indicates where the Oregon Trail **began**?

A. 1

B. 2

C. 3

D. 4

Reporting Category/Learning Standard for Item 27: ***Geography/Effects of Geography***
Core Knowledge Topic: **Expansion, Reform, and Economic Growth (1800 to 1861)**

(28) What was the South's largest cash crop by the 1850s?

A. tobacco

B. rice

C. sugar cane

D. cotton

Reporting Category/Learning Standard for Item 28: ***Economics/American and Massachusetts Economic History***
Core Knowledge Topic: **Expansion, Reform, and Economic Growth (1800 to 1861)**

(29) All of the following contributed to the creation of the Confederate States of America **except** the

A. attack on Fort Sumter.

B. Trail of Tears.

C. Nullification Crisis.

D. election of Abraham Lincoln.

Reporting Category/Learning Standard for Item 29: ***U.S. History/Historical Understanding***
Core Knowledge Topic: **The Civil War and Reconstruction (1850 to 1877)**

Use the quotation below to answer question 30.

> On the 1st day of January in the year of our Lord 1863, all persons held as slaves within any state or . . . part of a state (whose) people . . . shall then be in rebellion against the United States, shall be then, thenceforward, and forever free.

㉚ This is a quote from the

A. Gettysburg Address.

B. Lincoln-Douglas Debates.

C. Emancipation Proclamation.

D. Thirteenth Amendment.

Reporting Category/Learning Standard for Item 30: ***U.S. History/Research, Evidence, and Point of View***
Core Knowledge Topic: **The Civil War and Reconstruction (1850 to 1877)**

Session 2, Open-Response Question

(31) Before 1800, the majority of people living in the United States were involved in agriculture. However, this began to change in the early 1800s as the Industrial Revolution began in the northeastern United States. The introduction of the factory system helped bring many changes that would greatly affect the land and/or land use. Among those changes were the following:

- harnessing of rivers for water power
- development of national roads, canals, and railroads
- increased demand for cotton and wool
- migration of people from farms to cities

a. Describe **one** of the changes listed above. Be sure to give specific examples to support your answer.

b. Explain how the change you described in part a affected the land and/or land use.

*Reporting Category/*Learning Standard for Item 31: ***U.S. History/Historical Understanding***
Core Knowledge Topic: **Expansion, Reform, and Economic Growth (1800 to 1861)**

Session 2, Multiple-Choice Questions

Use the quotation below to answer question 32.

> Four score and seven years ago our fathers brought forth on this continent a new nation, conceived in liberty, and dedicated to the proposition that all men are created equal. . . .
>
> Now we are engaged in a great civil war, testing whether that nation, or any nation so conceived and so dedicated, can long endure. We are met on a great battlefield of that war. We have come to dedicate a portion of that field as a final resting place for those who here gave their lives that that nation might live.
>
> — Abraham Lincoln, 1863

(32) This quote was part of a major address given by President Abraham Lincoln during a cemetery dedication following the Battle of

A. Antietam.

B. Fredericksburg.

C. Gettysburg.

D. the Wilderness.

*Reporting Category/*Learning Standard for Item 32: ***U.S. History/Historical Understanding***
Core Knowledge Topic: **The Civil War and Reconstruction (1850 to 1877)**

33 Before the former Confederate states could rejoin the Union between 1867 and 1877, they had to

A. end all association with the Democratic Party.

B. pay reparations for war damages in the North.

C. ratify the Fourteenth Amendment.

D. support public school integration.

Reporting Category/Learning Standard for Item 33: ***U.S. History/Historical Understanding***
Core Knowledge Topic: **The Civil War and Reconstruction (1850 to 1877)**

34 President Abraham Lincoln's goal for Reconstruction after the Civil War was to

A. punish the South for starting the Civil War.

B. help the South recover and rejoin the Union quickly.

C. send reformers to the South to set up new state governments.

D. help the Radical Republicans stay in power.

Reporting Category/Learning Standard for Item 34: ***U.S. History/Historical Understanding***
Core Knowledge Topic: **The Civil War and Reconstruction (1850 to 1877)**

35 The main purpose of the Thirteenth Amendment to the Constitution was to

A. protect the rights of people accused of crimes.

B. limit the powers of the federal government.

C. outlaw slavery in the United States.

D. limit future rebellions by states.

Reporting Category/Learning Standard for Item 35: ***Civics and Government/Principles and Practices of American Government***
Core Knowledge Topic: **The Civil War and Reconstruction (1850 to 1877)**

(36) Which energy source is a fossil fuel?

A. coal

B. wood

C. the Sun

D. the wind

Reporting Category/Learning Standard for Item 36: ***Geography/Physical Spaces of the Earth***
Core Knowledge Topic: **N/A**

(37) *Tundra* is **best** defined as a

A. mountainous region barren of plant and animal life.

B. tropical grassland supporting herds of grazing animals.

C. flat, treeless plain in an arctic region.

D. forest community supporting a variety of life-forms.

Reporting Category/Learning Standard for Item 37: ***Geography/Physical Spaces of the Earth***
Core Knowledge Topic: **N/A**

(38) What major constitutional provision was established by the Fifteenth Amendment?

A. Citizens cannot be denied the right to vote because of race, color, or previous condition of servitude.

B. Citizens are entitled to receive a jury trial by their peers.

C. Citizens have the rights of freedom of speech, press, religion, and peaceful assembly.

D. Citizens are allowed to seek employment in any part of the United States.

Reporting Category/Learning Standard for Item 38: ***Civics and Government/The Founding Documents***
Core Knowledge Topic: **The Civil War and Reconstruction (1850 to 1877)**

History and Social Science, Grade 8

Session 2, Open-Response Question

Read the excerpt below from a report concerning a factory in Manchester, New Hampshire in 1846.

39

> . . . the workers labored thirteen hours a day in the summer time, and from daylight to dark in the winter. At half past four in the morning the factory bell rings, and at five the girls must be in the mills.
>
> . . . Enter with us into the large rooms, when the looms are at work . . . the din and clatter of . . . five hundred looms struck us . . . as something frightful and infernal.
>
> . . . although the day was warm . . . the windows were down; we asked the reason, and a young woman answered . . . that "when the wind blew, the threads did not work well." After we had been in the room for fifteen or twenty minutes, we found ourselves . . . in quite a perspiration.
>
> —From A Description of Factory Life by an Associationist, 1846

a. Describe how workers in this factory and others in the 1840s attempted to change their working conditions. Be sure to include specific evidence in your answer.

b. How successful were these workers in actually changing working conditions? Be sure to include specific evidence in your answer.

*Reporting Category/*Learning Standard for Item 39: ***U.S. History/Historical Understanding***
Core Knowledge Topic: **Expansion, Reform, and Economic Growth (1800 to 1861)**

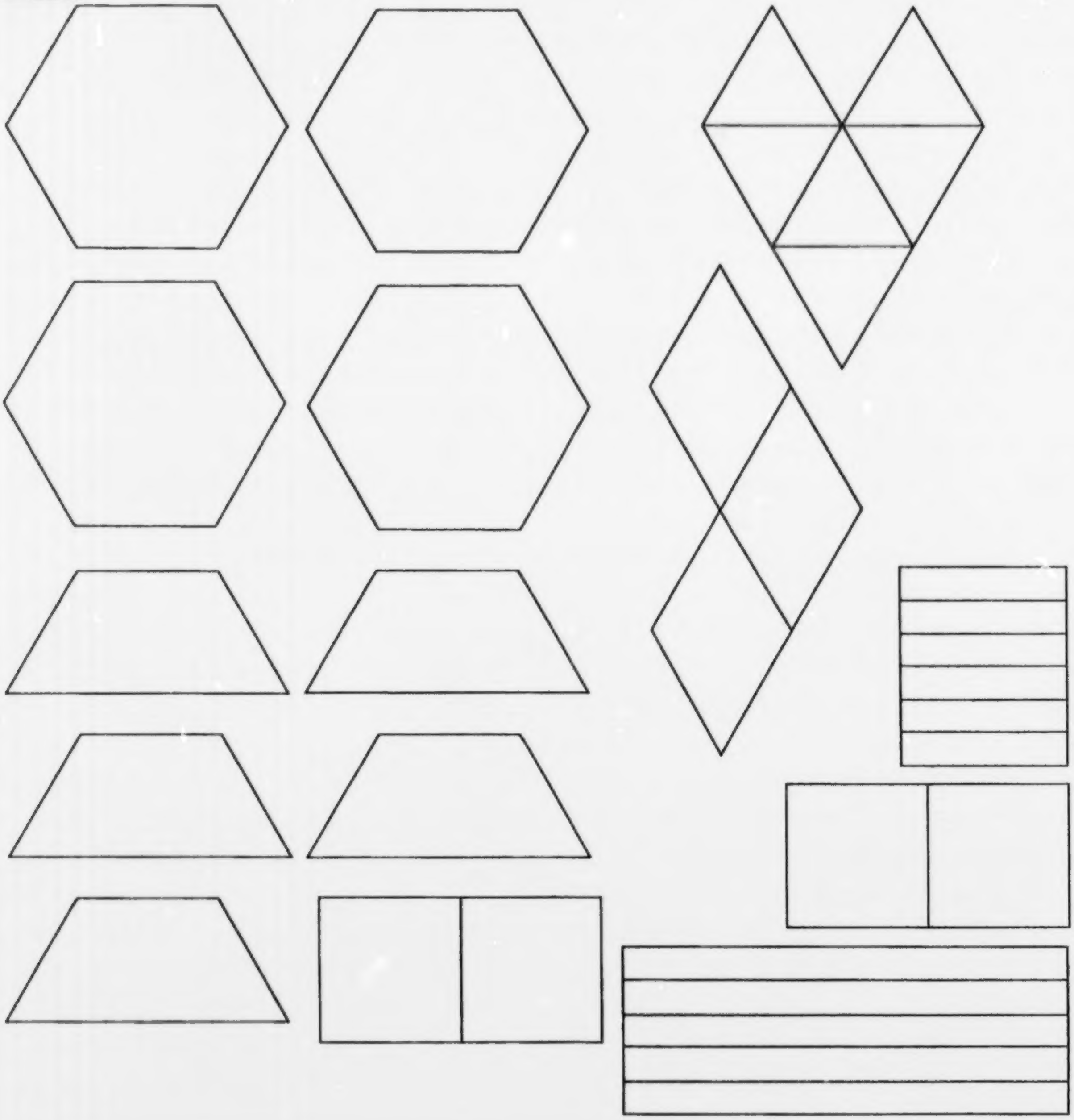
Appendix A

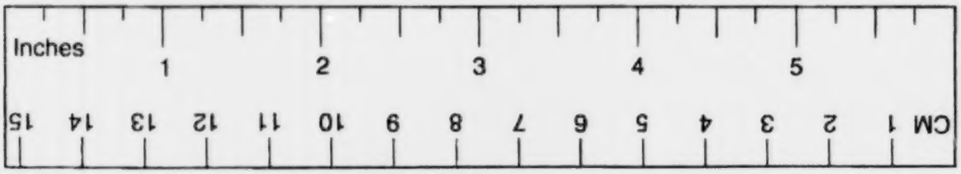
Mathematics Tool Kits and Reference Sheets

Appendix A

The Mathematics Tool Kits and Reference Sheets on the following pages have not been printed in the exact same proportions as those issued to students during MCAS test administration.

2002 Massachusetts Comprehensive Assessment System
Grade 4 Mathematics Tool Kit




Inches
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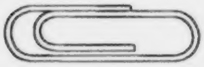


MASSACHUSETTS DEPARTMENT OF EDUCATION
MCAS
MASSACHUSETTS
COMPREHENSIVE
ASSESSMENT
SYSTEM

2002 Massachusetts Comprehensive Assessment System
Grade 6 Mathematics Reference Sheet

You may use the formulas, the ruler, and the protractor to answer questions on this test.

AREA FORMULAS

square .... $A = s \cdot s$
OR
$A = lw$

rectangle .... $A = bh$
OR
$A = lw$

parallelogram .... $A = bh$

triangle .... $A = \frac{1}{2}bh$

PERIMETER FORMULAS

perimeter = distance around

square .... $P = 4s$

rectangle .... $P = 2b + 2h$
OR
$P = 2l + 2w$

triangle .... $P = a + b + c$

VOLUME FORMULAS

rectangular prism .... $V = lwh$

cube .... $V = s \cdot s \cdot s$
(s = length of an edge)

CIRCLE FORMULAS

$C = 2\pi r$
OR
$C = \pi d$
$A = \pi r^2$

CONVERSIONS

3 feet = 1 yard

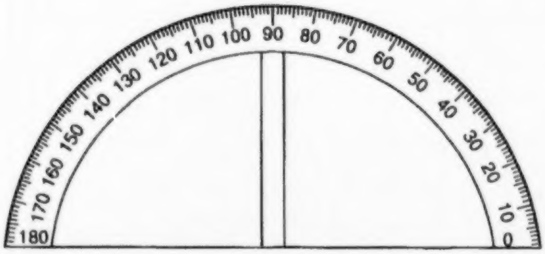
5280 feet = 1 mile

60 seconds = 1 minute

60 minutes = 1 hour

2002 Massachusetts Comprehensive Assessment System
Grade 6 Mathematics Tool Kit

MASSACHUSETTS
COMPREHENSIVE
ASSESSMENT
SYSTEM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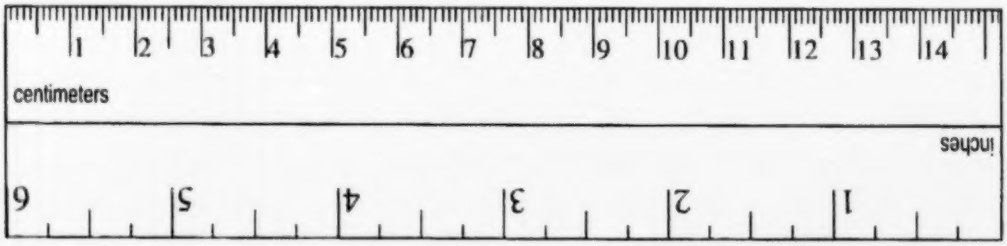
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centimeters
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6

MASSACHUSETTS
COMPREHENSIVE
ASSESSMENT
SYSTEM

2002 Massachusetts Comprehensive Assessment System
Grade 8 Mathematics Reference Sheet

Use the information and ruler below as needed to answer questions in this test.

PERIMETER FORMULAS

square..............$P = 4s$

rectangle ....$P = 2b + 2h$

triangle............$P = a + b + c$

CIRCLE FORMULAS

circle ....$C = 2\pi r$

OR

$C = \pi d$

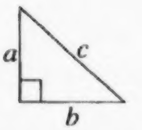
$A = \pi r^2$

CONVERSIONS

1 mile = 5280 feet

1 square mile = 640 acres

Pythagorean Theorem



$a^2 + b^2 = c^2$

AREA FORMULAS

square..............$A = s^2$

rectangle..........$A = bh$

OR

$A = lw$

triangle............$A = \frac{1}{2}bh$

circle ....$A = \pi r^2$

trapezoid ....$A = \frac{1}{2}h(b_1 + b_2)$

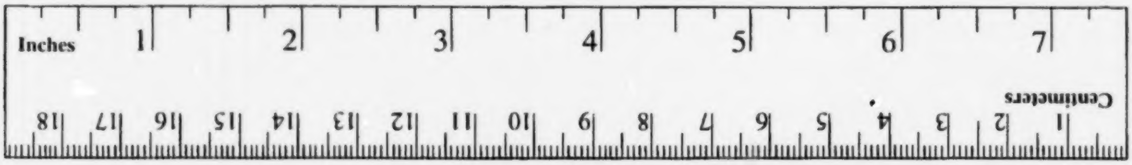
VOLUME FORMULAS

rectangular prism ....$V = Bh$
(B = area of base)

cone...............................$V = \frac{1}{3}\pi r^2 h$

cylinder ....$V = \pi r^2 h$

cube...............................$V = s^3$
(s = length of an edge)



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ASSESSMENT
SYSTEM

2002 Massachusetts Comprehensive Assessment System
Grade 10 Mathematics Reference Sheet

AREA FORMULAS

triangle .... $A = \frac{1}{2}bh$

rectangle .... $A = bh$

square .... $A = s^2$

trapezoid .... $A = \frac{1}{2}h(b_1 + b_2)$

CIRCLE FORMULAS

$C = 2\pi r$
$A = \pi r^2$

VOLUME FORMULAS

cube .... $V = s^3$
(s = length of an edge)

rectangular prism .... $V = lwh$

OR

$V = Bh$
(B = area of the base)

sphere .... $V = \frac{4}{3}\pi r^3$

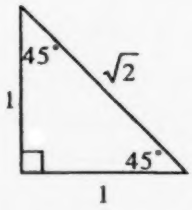
right circular cylinder .... $V = \pi r^2 h$

right circular cone .... $V = \frac{1}{3}\pi r^2 h$

right square pyramid .... $V = \frac{1}{3}s^2 h$

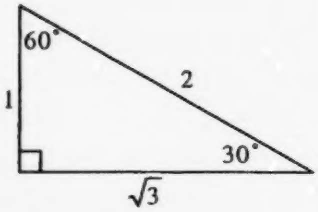
LATERAL SURFACE AREA FORMULAS

rectangular prism .... $LA = 2(hw) + 2(lh)$
right circular cylinder .... $LA = 2\pi rh$
right circular cone .... $LA = \pi r\ell$
right square pyramid .... $LA = 2s\ell$
(ℓ = slant height)



TOTAL SURFACE AREA FORMULAS

cube .... $SA = 6s^2$
rectangular prism .... $SA = 2(lw) + 2(hw) + 2(lh)$
sphere .... $SA = 4\pi r^2$
right circular cylinder .... $SA = 2\pi r^2 + 2\pi rh$
right circular cone .... $SA = \pi r^2 + \pi r\ell$
right square pyramid .... $SA = s^2 + 2s\ell$
(ℓ = slant height)



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